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ABSTRACT

This staff guide accompanies a ten-unit workshop designed to assist supervisors and other personnel responsible for training to strengthen and expand instructional effectiveness. Skills addressed include: designing instructional objectives, evaluating achievement, choosing instructional strategies, utilizing media, and managing instruction. The material is designed for flexibility in choice and sequence of units as well as schedule of presentation.
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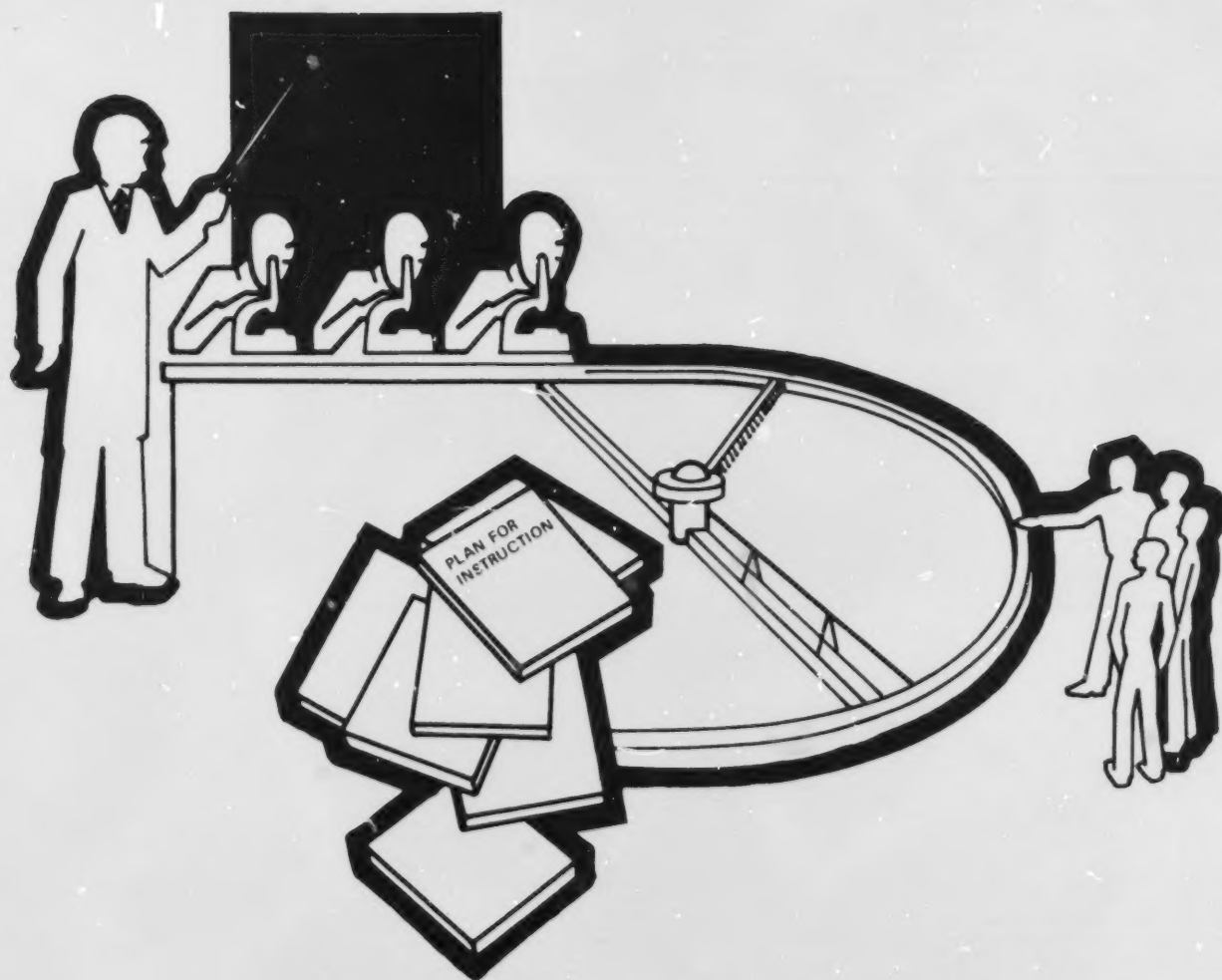


Advanced Instructional Technology

Staff Guide

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

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FOREWORD

In 1970, in response to an urgent need for instructors in wastewater treatment plant operations, the U.S. Environmental Protection Agency initiated an Instructor Training Program. The initial "Basic" course was developed by Kenneth M. Hay, Education Specialist in the Office of Water Programs. It was designed for persons experienced in plant operations who expected to be training others, but who had had no training in instructional methodology and techniques. Course content was continually reviewed and modified as needed, based on experience gained by its presentation to hundreds of novice trainers throughout the country. Some of the training materials were formalized (via a grant) into a staff guide to assist others in similar training efforts.

The Instructor Training Program was later expanded to include an "Advanced" workshop for individuals who had completed the Basic course and had some experience as instructors, but who needed more background and practice in developing instructional programs. Training materials were developed and several area workshops were conducted with grant funds.

In order to consolidate all the materials resulting from the extensive experience in offering this training, EPA's National Training and Operational Technology Center awarded a contract to Development and Evaluation Associates, Incorporated, of Syracuse, New York. The contractor revised, integrated, and expanded the existing materials to produce Staff Guides, Transparency Masters, and Participant Reference Manuals for 1) a Basic Instructional Technology workshop and 2) an Advanced Instructional Technology workshop. The project was completed in September, 1979.

The materials are now available to assist others who are responsible for training environmental instructors in federal, state and local programs. The format will enable them to use the materials as easily and effectively as possible in a wide variety of training situations. Persons interested in conducting the workshops can contact U.S. EPA-NTOTC, Cincinnati, Ohio, 45268, for information about obtaining copies of the manuals.

**OTHER U.S. ENVIRONMENTAL PROTECTION AGENCY
INSTRUCTIONAL SUPPORT SERVICES AND MATERIALS**

INSTRUCTIONAL RESOURCES CENTER

The U.S. EPA National Training and Operational Technology Center (NTOTC) maintains an Instructional Resources Center in Cincinnati, Ohio. A primary objective is the compilation and dissemination of information about water quality and pesticide instructional materials available to interested persons. The "Instructional Resources Center Bulletin" is designed as the communications link between the Center and persons involved in environmental education and training. If you wish to receive free copies of the Bulletin, send your name, position title, organization or institution or agency name, mailing address and phone number to:

IRC Bulletin
U.S. EPA - NTOTC
Cincinnati, Ohio 45268

INSTRUCTIONAL MATERIALS CATALOG

Several audiovisual units and course packages are available for free loan from U.S. EPA's National Training and Operational Technology Center. The "Water Quality Control Instructional Materials" catalog describes slide/tape units, 16 mm films, videocassettes and course packages that can be borrowed. If you wish to obtain a free copy of the catalog, please send address information to:

Instructional Resources Center
U.S. EPA - NTOTC
Cincinnati, Ohio 45268

INSTRUCTIONAL RESOURCES INFORMATION SYSTEM

The Instructional Resources Information System (IRIS) is a computer-based information system. It currently lists information about 3000 printed or audiovisual water quality and pesticide instructional resources available from various individuals, state and federal government agencies, educational institutions and commercial companies throughout the country. For more information about this system, write to:

U.S. EPA Information Dissemination Project
Ohio State University
1200 Chambers Road
Columbus, Ohio 43212

INSTRUCTIONAL SUPPORT PACKAGES for TRAINING ENVIRONMENTAL PROFESSIONALS

The U.S. EPA National Training and Operational Technology Center (NTOTC) has developed instructional packages for several technical courses of interest to water, wastewater and land management personnel. Each package consists of a course manual, a staff guide and visual or audiovisual instructional aids for each topic. The printed manuals are available through EPA's Instructional Resource Information System (IRIS) and/or the National Technical Information Service (NTIS). Instructional aids for teaching the topics are available on free loan from EPA's NTOTC.

Following is a description of the courses for which instructional packages are currently available. The format of the manuals facilitates selection and presentation of those topics of interest to a particular student or group of students.

For more information about obtaining any of these materials, contact:

Instructional Resources Center
U.S. EPA - NTOTC
Cincinnati, Ohio 45268

Self-Monitoring Procedures: Basic Laboratory Skills

- For:** Treatment plant personnel who are required to monitor effluent discharges and who have had little or no previous experience in laboratory work.
- Topics:** Review of basic mathematics including the metric system, formulas and percentage; basic chemical laboratory operations such as weighing techniques, use of equipment and preparation of reagents; basic microbiological laboratory operations. Emphasis is on practice of skills.
- Time:** Seventeen lessons ranging from 0.5 to 3.0 hours. Total instruction time is about 38 hours.

Effluent Monitoring Procedures: Basic Parameters for Municipal Wastewaters

- For:** Municipal treatment plant personnel who are required to sample, measure and analyze their discharges and who have had little or no previous experience in laboratory work.
- Topics:** Open Channel Flow Measurements, Biochemical Oxygen Demand, Dissolved Oxygen, pH, Fecal Coliform by MPN and MF methods, Total Residual Chlorine, Suspended and Settleable Solids, Reporting Data. Emphasis is on laboratory practice.
- Time:** Eighteen lessons ranging from 0.5 to 7.5 hours. Total instruction time is 30 to 45 hours.

Effluent Monitoring Procedures: Metals Analyses

- For:** Municipal treatment plant personnel who are responsible for performing metal analyses and have had little or no experience in laboratory work.
- Topics:** Various metals are used as examples of six methods used to determine metals: Boron, colorimetry; Calcium, volumetric; Copper, Magnesium, Manganese, Zinc, direct aspiration atomic absorption; Lead, extraction followed by atomic absorption; Mercury, flameless atomic absorption; Potassium and Sodium, flame photometry. Emphasis is on laboratory practice.
- Time:** Seven lessons ranging from 2.5 to 5 hours. Total instruction time is 20 to 23 hours.

Effluent Monitoring Procedures: Nutrients

- For:** Municipal treatment plant personnel who are responsible for performing nutrient analyses and who have had little or no experience in laboratory work.
- Topics:** Phosphorus, Kjeldahl Nitrogen, Ammonia, Organic Nitrogen (by difference), Nitrate and Nitrite Nitrogen by Cadmium Reduction. Also Chemical Oxygen Demand and Oil and Grease. Emphasis is on laboratory practice.
- Time:** Nine lessons ranging from 1.0 to 7.0 hours. Total instruction time is 27 to 33.5 hours.

Methods for Determination of Chemical Contaminants in Drinking Water

- For:** Chemists and technicians with little or no experience in chemical procedures required to monitor drinking water.
- Topics:** Sampling, Statistics, Quality Control, Safety, Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver, Fluoride, Nitrate, Organics (chlorinated Hydrocarbons, chlorophenoxys, trihalomethanes), Chlorine and Turbidity. Representative methods can be selected for the laboratory practice sessions.
- Time:** Fourteen lessons ranging from 1.0 to 3.8 hours. Total instruction time is 26 to 49 hours.

Determination of Residual Chlorine and Turbidity in Drinking Water

- For:** Chemists and technicians with little or no experience in chemical procedures required to monitor drinking water.
- Topics:** Compliance Requirements, Total Residual Chlorine and Turbidity. Emphasis is on laboratory practice.
- Time:** Five lessons ranging from 0.75 to 1.5 hours. Total instruction time is 5 hours.

Inorganic Analyses in Water Quality Control Programs

- For:** Chemists and technicians with chemical laboratory experience, 1 year of college level inorganic chemistry and 1 semester of quantitative analysis (or equivalent).
- Topics:** Sample Handling, Compliance Methodology, Safety, Analytical Techniques, Volumetric Analysis, Precision, Accuracy, Quality Assurance Programs, Acidity and Alkalinity, Total Residual Chlorine, Fluoride, Hardness, Nitrate and Nitrite Nitrogen, Total Phosphorus, Total and Suspended Solids, Specific Conductance, Turbidity. Emphasis is on laboratory practice.
- Time:** Nineteen lessons ranging from 0.5 to 5.25 hours. Total instruction time is 30 hours.

Organic Analysis in Water Quality Control Programs

- For:** Chemists and technicians with chemical laboratory experience, 1 year of college level organic chemistry and one semester of quantitative analysis (or equivalent).
- Topics:** Sample Handling, Compliance Methodology, Safety, Control of Analytical Performance, Spectrophotometer and Calibration Graphs, Gas Chromatography, Dissolved Oxygen, Biochemical Oxygen Demand, Chemical Oxygen Demand, Chlorinated Hydrocarbons, Total Organic Carbon, Total Kjeldahl and Organic Nitrogen, Oil and Grease, Phenolics, Polychlorinated Biphenyls, Surfactants. Emphasis is on laboratory practice.
- Time:** Twenty-one lessons ranging from 0.5 to 5.25 hours. Total instruction time is 26 to 30 hours.

Bacteriological Methods in Water Quality Control Programs

- For:** Bacteriologists and technicians with bacteriological laboratory experience including sample inoculations, transfers, media preparation and handling, and related skills.
- Topics:** Compliance Methodology; Chlorine Determinations and Turbidity; Bacterial Indicators; Equipment, Media and Solutions, Sample Volumes, Sample Collection and Test Procedures for both the Multiple Dilution Tube (MPN) and Membrane Filter (MF) methods; Statistics and Geometric Means. Emphasis is on laboratory practice.
- Time:** Twenty-one lessons ranging from 0.75 to 4.0 hours. Total instruction time is 28.75 hours.

Land Application of Wastes

- For:** Engineers, scientists, waste management specialists and other professionals with at least the equivalent of an undergraduate degree in engineering, agriculture or a related discipline.
- Topics:** Course integrates pertinent information from sanitary and environmental engineering, agronomy, soil science, agricultural engineering, economics and law as applicable to utilizing land for the application of various types of wastes. Lessons are: Soil as a treatment medium, Site evaluation procedures, Design approaches, Social factors, Vegetative cover, Alternative systems, Monitoring, Nitrogen management, Phosphorus management, Toxic element interactions, Organics, Legal aspects, Crop selection, Non-crop uses, Costing procedure, Water management and climate effects.
- Time:** Twenty-one modules ranging from 0.5 to 3.0 hours. Designed for a workshop setting of about 40 hour duration.
- Note:** Materials were developed by a grantee.

Erosion and Sediment Control, Audiovisual Training Program

- For:** Those responsible for erosion and sediment control, management, inspections or State standard development or support.
- Topics:** Erosion and sediment control, Soils, Rainfall-runoff relationships, Erosion and sedimentation, Plant materials, Control of runoff during construction, Vegetative soil stabilization, Stream erosion control, Temporary soil stabilization, Sediment from construction, Control planning, Wooded sites, Roles and responsibilities.
- Time:** Thirteen modules, self-paced. The package is designed for both self-study and for group presentation.
- Note:** Materials were developed by a contractor.

CURRICULUM GUIDES

Curriculum guides for training water quality control personnel have been developed by various institutions and are available for use and adaptation by others. For further information about the following, contact the source cited.

A Two-Year Water Quality Monitoring Curriculum

Source: Ulster County Community College
Attn: Professor Richard Glazer's Office
Stone Ridge, New York 12484

Wastewater Technology: A Two-Year Post-High School Instructional Program

Source: Charles County Community College
Attn: Mr. William Engel's Office
P.O. Box 910
La Plata, Maryland 20646

Wastewater Engineering Technology Program

Source: Clemson University
Attn: Dr. Joseph Allen's Office
Clemson, South Carolina 29631

Note: This is a four year program.

Bachelor of Engineering Technology Curriculum in Water Quality Management

Source: Pennsylvania State University
Attn: Dr. Charles Cole's Office
Capitol Campus, W 261
Middletown, Pennsylvania 17057

Note: This is a two + two or a four year program.

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INTRODUCTION

As part of the overall goal of EPA to help provide environmental professionals with the skills required to plan and deliver training programs, materials and guidelines have been developed for conducting a workshop in Advanced Instructional Technology. The information is presented in two manuals, a Staff Guide and a Participant Reference Manual.

The Staff Guide is intended to be used by the instructor in planning and delivering the workshop. The Participant Reference Manual contains materials for student use during the workshop, and is also intended for use "on-the-job" in preparing future instructional activities.

To prepare for delivering a workshop, read the following information about these materials. Then, beginning with the Staff Guide section entitled "Using This Staff Guide in Planning and Conducting the Workshop", proceed to make the necessary decisions and plans for delivering a workshop tailored to those who will be participants.

DESCRIPTION OF WORKSHOP

This workshop consists of ten units of instruction totaling approximately 31 hours of classroom time. It can be conducted on a variety of schedules ranging from four continuous days to several weekends or a series of half-days. The materials have been developed in a manner to provide flexibility in the choice of units to be presented; i.e., in instructional skills to be strengthened, according to the needs of participants. Thus, you might decide to omit some units or lessons of units, depending on the background and needs of those who attend.

It is designed for supervisors and other personnel who are responsible for on-the-job training and/or brief seminars on work-related topics, and who have completed the Basic Instructional Technology Workshop or its equivalent.

The workshop is intended to strengthen and expand the skills of participants in designing and/or implementing instructional objectives, evaluating trainee achievement and instructional effectiveness, choosing instructional strategies, using and selecting or developing instructional media, utilizing adaptive methods for instruction, and managing instruction in either a work environment or seminar-type situation.

Most of the content is treated on a strictly applied basis with a minimum of theory and technical explanation. The instructional activities include lectures, guided discussions, demonstrations, individual assignments and readings. A variety of instructional methods and media have been included in order to demonstrate the proper use of these techniques.

By the end of the workshop, the concepts and principles composing each topic will have been described and demonstrated and each participant will have practiced their application and received feedback on their performance.

SUMMARY PLAN OF INSTRUCTION

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Unit of Instruction	Time	Method(s)	Content Outline
Unit One Introduction	1 hour	-Lectures -Assignment -Guided discussion	-Purpose of the workshop -Systematic approach to instruction
Unit Two Analysis	2½ hours	-Lectures -Guided discussion -Assignment	-Analysis of problems -Job and task analysis
Unit Three Designing Instructional Objectives	2½ hours	-Lectures -Guided discussion -Assignment	-Writing objectives -Types and levels of objectives -Hierarchies of objectives
Unit Four Designing Evaluations	5½ hours	-Lectures -Guided discussions -Assignments	-Principles of criterion-referenced test development -Design of written test items -Evaluating instructional activities
Unit Five Selecting Instructional Methods	2 hours	-Demonstration -Assignments	-Types of methods -Selecting methods
Unit Six Selecting Media for Instruction	2 hours	-Lecture -Assignments -Guided discussions	-Categories of media -Selecting media
Unit Seven Selecting Instructional Strategies	7 hours	-Lecture -Assignments	-Planning practice activities -Types of reinforcement -Motivation -Content enhancement strategies -Teaching toward the objective
Unit Eight Using and Developing Media	4 hours	-Assignments -Guided discussions	-Utilization of media in instruction -Preparing overhead transparencies
Unit Nine Adaptive Instruction	2 hours	-Lecture -Guided discussions	-Developing tutorials -Individual assignments -Individualized Learning Packages
Unit Ten Management of Instruction	2½ hours	-Lectures -Guided discussions	-Classroom management -Training in a work environment -Planning and conducting workshops

MILESTONES IN WORKSHOP PLANNING AND PREPARATION

Time in Weeks Prior to Workshop Delivery	Activity
Ten	Obtain complete copies of Staff Guide and Participant Reference Manual and review thoroughly.
Nine	Design workshop schedule, select dates and times, secure classroom/meeting space.
Eight	Announce workshop or otherwise establish procedures for determining the participants.
Seven	Check physical requirements for conducting workshop and make necessary arrangements, place orders, etc. - seating - water, coffee - ventilation, heat, light - overhead projector, screen - blackboard or easel - other audio-visual equipment for Unit Six - Xerox and Thermofax equipment - paper, pencils, etc.
Six	Prepare to conduct workshop by thoroughly reviewing Instructional Package Worksheets, Content Outlines, etc. Review the materials under "References" for additional help in unfamiliar areas.
Five	Obtain list of intended participants and send letter with Pre-Workshop Survey.
Four	Prepare the necessary copies of all instructional materials - Handouts - Participant Reference Manuals - Overhead transparencies
Three	Analyze Pre-Workshop Survey
Two	Prepare final notes for delivering each lesson. Determine the points to be emphasized, examples to be used, etc.
---	Begin workshop.

Sample Letter to Workshop Participants

Dear _____,

Welcome to the Advanced Instructional Technology Workshop. The workshop will begin on (date) at (time). It will be held in/at (location...include map if necessary). A complete outline of the workshop's scheduled meeting dates and times is enclosed.

You will be one of _____ participants in the workshop. I will be your instructor and we will be using a specially designed set of materials from the Environmental Protection Agency's National Training and Operational Technology Center in Cincinnati, Ohio. The purpose of the workshop is to expand your skills and knowledge in planning and delivering effective training programs. Instructional activities will include lectures, discussions, assignments and practice sessions. As part of the workshop, you will receive a Reference Manual useful for planning and conducting your own training sessions in the future.

I am looking forward to conducting this workshop. To help my preparation for these sessions, I am interested in learning as much as possible about the backgrounds of the participants. With this information I will be able to adapt the instructional presentations to fit their backgrounds. Therefore, would you please take the time now to complete the enclosed survey and mail it to me in the stamped self-addressed envelope provided.

Thank you for helping me prepare for this workshop. I look forward to seeing you on the (date). If you have any particular questions before then, you can reach me at (phone number).

Sincerely,

Pre-Workshop Survey

Name _____ Occupation _____

1. Reason for taking this workshop:
2. Have you completed the Basic Instructional Technology Workshop?
When and where?
3. Do you have any teaching experience? If so, please explain.
4. Do you know how to operate any audio-visual equipment? (16 mm
motion picture projector, slide projector, etc.) If yes, which ones?
5. Have you ever developed instructional/training materials or designed
a workshop? Please describe your experience in this area.
6. Have you ever created and used tests and rating scales or planned
and carried out an evaluation of employee job performance?
7. What do you see as the most important training need in your work
setting for yourself or others?

Thank you for your help.

TRAINING RESOURCES

Instructional Staff

This workshop is designed so that it may be conducted by one instructor working with 12 participants. However, given the rather intense instructional load and tight timelines, it would be highly advisable to have it conducted by two instructors working in a team-teaching arrangement. In order to maintain desired levels of feedback and individual assistance, a second instructor becomes a virtual necessity for workshop enrollments in excess of 12 participants.

The instructor of this workshop should be an experienced teacher or trainer with at least some limited familiarity with the activities and work settings of environmental personnel. Instructors are not expected or required to have any particular backgrounds in the theory and application of all the various instructional technology and evaluation subjects covered in the workshop. References are provided for specific subject areas (listed in each Unit Overview and at the conclusion of the Staff Guide) if the instructor desires to strengthen his/her preparation.

Facilities and Equipment

Minimum Requirements

1. A comfortable, well-lighted classroom area with tables or individual desks for the learners.
2. A chalkboard, overhead projector and screen, and lighting control equipment. (If the use of an overhead projector is an absolute impossibility, the figures intended as transparencies can be copied and used as handouts).
3. A Xerox or Thermofax machine for making transparencies.

Recommended Additions

1. Additional nearby rooms or workspace of some kind in which small groups of participants can meet to work or individuals can practice presentations.
2. Carousel-type slide projector, 16 mm motion picture projector, cassette and/or reel-to-reel tape playback units (and sample films, slides and tapes).

Materials

Minimum Requirements

1. Copies of Participant Reference Manuals for each participant and instructor.
2. Overhead transparency copies of all figures.
3. Copies of all handouts, punched for insertion into 3-ring binders.
4. Writing paper and pencils/pens.
5. Materials for making transparencies (permanent felt-tipped markers and acetate sheets, Xerox and/or Thermofax transparency masters).

USING THIS STAFF GUIDE IN PLANNING AND CONDUCTING THE WORKSHOP

The Staff Guide is designed to provide you with all the basic information you need to plan and conduct the workshop. There are ten units of instruction, each of which is subdivided into individual lessons. Each unit is summarized in a Unit Overview and the lessons are described in detail in individual Instructional Package Worksheets (IPWs). Most of the lessons also have accompanying Support Materials for use in delivering the instruction. Support Materials may consist of Content Outlines (for conducting lectures or guided discussions), Figures (for overhead transparencies), and Handouts (for participant readings, notes, assignments, evaluation activities, etc.). Conduct of a given lesson may also depend heavily upon material in the Participant Reference Manual (in which case the use of such material is noted on the lesson Instructional Package Worksheet).

To plan the workshop, begin by reviewing the Summary Plan of Instruction and each Unit Overview provided at the beginning of the units. Select those units and lessons which will meet the needs of the participants. You will probably want to include Unit One, Introduction. It is strongly recommended that you also include Unit Two, Analysis and Unit Three, Designing Instructional Objectives. There are two significant reasons for this recommendation, even if participants rely totally on instructional materials prepared by others:

1. Instructional objectives in available materials may need to be altered to meet the need and situation of the individual trainee.
2. The instructor who uses objectives and materials prepared by others must have a good understanding of the elements of those objectives so he/she can effectively use instructional technology in order to accomplish the intended learning outcome.

Your choice among the remaining units and lessons should be based on your assessment of the backgrounds and needs of the class members. Accordingly, you may decide to omit certain lessons or even entire units.

After making these decisions, a final schedule for your workshop can be drawn up. The Summary of Unit Activities at the end of each unit overview includes the estimated time for each lesson. This should be useful in listing the time allotments on your final schedule. Consider the following points in designing a workshop schedule to fit your circumstances.

1. Present the workshop in as concentrated a fashion as possible. For example, presenting the workshop on two consecutive weekends is preferred over a schedule that would spread the workshop over several months.

2. Do not attempt to cover too much in a single day. You should avoid planning for more than 7½ hours of instruction in a single day. Three and a half to four hours of instruction is the limit for an afternoon or evening session (unless it involves a lot of individual activity).
3. Use common sense in dividing units of instruction across two days. Do not subdivide lessons unless absolutely necessary. Only divide units at the lesson level where there is a logical break between lessons.
4. If the workshop is to be offered across a number of weeks, build in extra time at the beginning of each session to review what has already been covered.
5. The units are autonomous; although the preferred unit sequence is to offer the units in the order in which they are presented in the Staff Guide, that order can be rearranged to suit the particular needs of specific training groups. Individual units may be selected as sole focuses of instruction. However, Unit One, which reviews the development process as taught in the Basic Workshop, should precede instruction on other units.

The next step in preparing the workshop is to give a copy of the schedule, Staff Guide and Participant Reference Manual to the instructors who will be involved in presenting the workshop. Each instructor should study the details of every unit and lesson for the presentations he/she will give during the workshop. Each must have adequate time to prepare the actual presentations since the content outlines provided in this guide are just that -- outlines of key instructional points and activities. Each instructor must also be thoroughly familiar with the related support materials which are provided for conducting the instruction.

The function and contents of the Unit Overviews, Lesson Instructional Package Worksheets (IPWs) and Support Materials are explained below.

Unit Overviews

Unit Overviews are designed to describe the activities of a whole unit of instruction. For most units, the overview summarizes the information and objectives contained in lesson IPWs. The standard Unit Overview consists of the following parts:

Overview: A summary of the unit's instructional content and its relevance to the overall goal of the workshop.

Entering Competencies: The prerequisite skills and knowledge which participants should possess before beginning the unit in order to complete it successfully.

Summary of Objectives: A summary of the objectives of each of the unit's lessons. (As a summary, it is generally not stated in a strict behavioral format.)

Evaluation Activities: A description of those activities through which participant achievement of the unit's objective(s) is to be observed and/or judged.

References: Specific background readings relevant to the content of the unit. These references should be used by the instructor in preparing to deliver a unit containing any unfamiliar subjects.

Summary of Unit Activities: A brief outline of the unit including lesson titles, instructional methods/activities and their estimated duration, and a list of the specific support materials provided in the Staff Guide for conducting the instruction.

Lesson Instructional Package Worksheets

For almost every unit which is subdivided into individual lessons, each lesson is described in detail on individual Instructional Package Worksheets. The standard Instructional Package Worksheet consists of the following components:

Entering Competencies: The prerequisite skills and knowledge which participants should possess before beginning the lesson.

Objective: The specific objective for that lesson stated in behavioral terms.

Justification: An explanation of the importance and role within the unit and the workshop as a whole.

Evaluation Activities: A description of those activities through which participant achievement of the lesson's objective is to be observed and/or judged.

Resources: A list of the specific support materials included for use in conducting the lesson's instructional activities.

Instructional Approach: A general set of directions for conducting the lesson. Typically these directions indicate the overall approach to be taken by the instructor along with an outline of key events.

To facilitate quick reference to various Unit Overviews and Lesson Instructional Package Worksheets, such pages have been edge-indexed by unit. The Index to Units on Page 11 provides a guide to the use of this indexing system.

Support Materials

Support materials are the specific resource provided for conducting the instruction. There are three main types of support materials included in the Staff Guide: Content Outlines, Figures, and Handouts.

Content Outlines

Content Outlines expand upon the directions given under the "Instructional Approach" section of the Instructional Package Worksheets. They provide an outline of the content points to be included in lectures. When necessary, they also include detailed directions to the instructor on the conduct of the lesson. (*These directions are printed in italics.*)

Content Outlines are not intended to replace the instructor's lesson and lecture planning activities. Rather, they are intended to provide a framework and brief illustration of the intended design of the lesson. They should also help the instructor to fit the actual workshop activities within the estimated time frames. Instructors should take particular care to develop and practice their lectures to fit within the available time. If a lecture is too short or too long, the content outline should be reviewed and the level of detail contained in the lecture reconsidered.

Figures

Figures have been designed for most of the lessons. They are illustrations or outlines of specific instructional points designed to highlight, emphasize, or clarify the content of a lecture, discussion, or other activity. They are listed as "Resources" in the lesson IPWs and masters are located after the Content Outline for each lesson. The Figures are designed to be used as overhead transparencies. (Use a Xerox or Thermofax machine and appropriate transparency film to create transparencies from the printed materials provided.) Specific use of the Figures is noted in the "Instructional Approach" section of the IPWs and in the Content Outlines. Figures are numbered sequentially by units. If you are not able to use the figures as transparencies, they must be copied and distributed as handouts.

Handouts

Handouts contain any materials intended to be distributed to participants during the instructional activities. They may include lecture notes for inclusion in the Participant Reference Manuals. They may also represent exercises, activities, or assignments of any kind to be completed by participants as part of a lesson. Handouts are also numbered sequentially within lessons and their intended use is noted in the "Instructional Approach" sections of IPWs and in the Content Outlines. Masters are located after the Content Outline and Figures for each lesson.

INDEX TO UNITS

- UNIT ONE - INTRODUCTION
- UNIT TWO - ANALYSIS
- UNIT THREE - DESIGNING INSTRUCTIONAL OBJECTIVES
- UNIT FOUR - DESIGNING EVALUATION
- UNIT FIVE - SELECTING INSTRUCTIONAL METHODS
- UNIT SIX - SELECTING MEDIA FOR INSTRUCTION
- UNIT SEVEN - SELECTING INSTRUCTIONAL STRATEGIES
- UNIT EIGHT - USING AND DEVELOPING MEDIA
- UNIT NINE - ADAPTIVE INSTRUCTION
- UNIT TEN - MANAGEMENT OF INSTRUCTION

ADVANCED INSTRUCTIONAL TECHNOLOGY

UNIT ONE
INTRODUCTION - Unit Overview

Estimated time for unit - 1 hour

Overview

This unit presents an introduction to the purposes and content of this workshop. The advantages of using a systematic approach to plan instruction are presented. A model of the activities involved in a systematic plan is explained. The results of these activities are described in terms of the information they provide for use in filling out planning forms such as the Instructional Package Worksheet (IPW).

Entering
Competencies

Participants are expected to be familiar with concepts of instructional development. For some of them, especially those who completed the workshop in Basic Instructional Technology, this unit will be a review. For others, this unit will present the concepts of instructional development in terms of this particular model.

Summary of
Objectives

By the end of this unit the participants will be able to:

- recreate the eight step instructional development model and explain it briefly
- explain the usefulness of a systematic process for planning and developing instruction.

Evaluation
Activities

Comprehension of the content of this unit is evaluated in a Summary Quiz in Lesson Two.

References

- Gagne, R. M. & Briggs, L. J. Principles of instructional design. New York: Holt, Rinehart and Winston, 1974.
- Gerlach, V. S. & Ely, D. P. Teaching and media: a systematic approach. Englewood Cliffs, NJ: Prentice-Hall, 1971.
- Mager, R. F. & Beach, K. M., Jr. Developing vocational instruction. Belmont, CA: Fearon Publishers, 1967.

Popham, W. J. & Baker, E. L. Systematic instruction.
Englewood Cliffs, NJ: Prentice-Hall, 1970.

Summary of Unit Activities

Lesson Title	Instructional Method	Time	Support Materials
1) The Instructional Development Process	Lectures	30 min.	Content Outline Figure 1.1
2) The Purpose of this Workshop	Lecture Assignment Guided Discussion	30 min.	Content Outline Figure 1.2 Handout 1.1

UNIT ONE: INTRODUCTION
LESSON 1 of 2: THE INSTRUCTIONAL DEVELOPMENT PROCESS

Estimated time: 30 minutes

Entering
Competencies

Before beginning this lesson the participants are expected to have completed the Basic Instructional Technology Workshop or its equivalent. They should be able to describe instructional development using and explaining such terms as needs assessment, problem and task analysis, and instructional strategies.

Objective

*Behavior
Conditions
Acceptable Performance*

By the end of this lesson the participants will be able to list the eight steps of a systematic approach to instruction and explain each briefly by recall. All four phases will be listed and the explanations will be correct as judged by the instructor.

Justification

This lesson provides a framework upon which the instruction of this workshop is built. It reinforces the concept that good instruction is the result of systematic planning.

Evaluation
Activities

Summary Quiz to be given at the end of this unit.

Resources

Content Outline
Figure 1.1 The Instructional Development Process

Instructional
Approach

Using Figure 1.1, present and explain the four-phase model. (Participants have a copy of the model in their reference manuals.) Explain that the next six units of the workshop teach specific procedures for performing the functions given in the model.

Further underscore the relevance of this instruction by pointing out that each of these procedures will yield specific information for use in filling out the Instructional Package Worksheets.

Finally, briefly describe the remaining units of the workshop.

UNIT ONE: INTRODUCTION
LESSON 1 of 2: THE INSTRUCTIONAL DEVELOPMENT PROCESS

Content Outline

Estimated time for presentation: 30 minutes

I. Presentation of the Model (lecture, 20 minutes)

Figure

- 1.1 *Use Figure 1.1 to explain how the activities of instructional development are organized in the model. In general terms explain the activities and the results of each step.*

A. Phase One: ANALYSIS

1. Define the problem - A problem definition worksheet is used to assist the developer in determining the nature of a performance problem in terms of who is affected, what is involved and why it is happening.
2. Analyze the tasks - The developer is able to isolate the specific employee behaviors which may be the subject of a training program. Tasks are further defined in terms of the steps required to perform them and the type and level of behavior involved.

B. Phase Two: DESIGN

3. Specify instructional objectives - A behaviorally stated objective is written for each task or step which is to be learned by an employee receiving training. The type and level of the behavior expressed in the objective impacts directly on the method chosen to deliver the instruction.
4. Determine evaluation activities - An evaluation activity is constructed to measure the achievement of the instructional objectives.

C. Phase Three: DEVELOPMENT

5. Select instructional methods and media - Based on the type and level of the objectives to be achieved, methods of delivering instruction can be chosen using the Instructional Methods Selection Table; media can be chosen using the Media Selection Table.
6. Develop instructional strategies - With the information compiled thus far, the developer is now able to complete an Instructional Package Worksheet (detailed in Lesson Two) and plan lessons.

D. Phase Four: DELIVERY AND REVISION

7. Deliver instruction
8. Evaluate and revise - The success of the developed instruction is evaluated and revisions are indicated at any of the above steps as necessary.

II. Utility of the Model and Description of the Workshop Units (lecture, 10 minutes)

Describe how the next six units of this workshop explain each of the steps in the process. Explain that there is a series of planning forms and worksheets to assist a trainer in completing each of these steps while developing instruction. The information gathered and developed on these forms is valuable for summarizing key elements involved in planning. One format for recording such a summary is the Instructional Package Worksheet described in the next lesson.

Finally, briefly describe Units Eight, Nine and Ten.

THE INSTRUCTIONAL DEVELOPMENT PROCESS

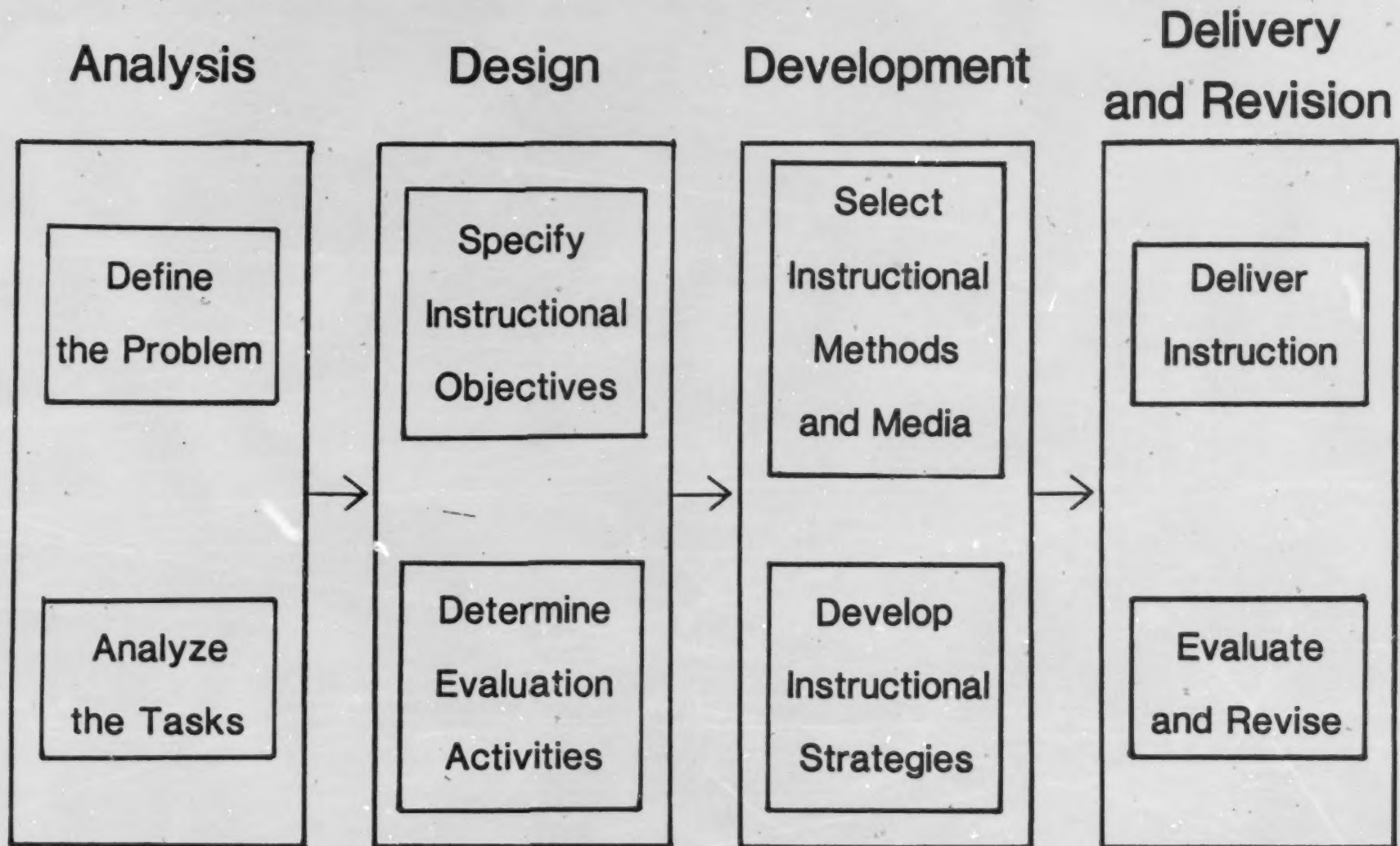


Figure 1.1/The Instructional Development Process

UNIT ONE: INTRODUCTION
LESSON 2 of 2: THE PURPOSE OF THIS WORKSHOP

Estimated time: 30 minutes

Entering
Competencies

The participants should be able to list and describe the steps in the Instructional Development Process.

Objective

Behavior
Conditions
Acceptable Performance

By the end of this lesson participants will be able to explain, from memory, that the purpose of this workshop is to learn to plan instruction systematically using the Instructional Package Worksheet.

Justification

As trainers, participants will be required to plan instruction. They will need some format to summarize key elements involved in planning. The Instructional Package Worksheet (IPW) is one of the formats EPA uses for this purpose.

Evaluation
Activities

Summary Quiz to be given in this lesson.

Resources

Content Outline
Figure 1.2 Instructional Package Worksheet
Handout 1.1 Summary Quiz

Instructional
Approach

Using Figure 1.2, introduce the IPW (copy in Participant Reference Manual) and explain that it is one format used by EPA to summarize key elements of a plan for instruction. Go through the forms line by line indicating the kinds of information requested. Explain that the reasons for including each piece of information will become apparent as we reach corresponding lessons in this workshop.

(If you are not familiar with the IPW format or have not used one yourself, you may wish to refer to the content outline which follows.)

Distribute Handout 1.1, Summary Quiz. After fifteen minutes discuss the participants' answers briefly.

UNIT ONE: INTRODUCTION
LESSON 2 of 2: THE PURPOSE OF THIS WORKSHOP

Content Outline

Estimated time for presentation: 30 minutes

INSTRUCTIONAL PACKAGE WORKSHEET CONTENT

CURRICULUM (TITLE):

COURSE (TITLE):

UNIT (NUMBER): (UNIT TITLE)

LESSON (NUMBER) of (TOTAL NUMBER of LESSONS in UNIT): (LESSON TITLE)

Estimated time: (NUMBER of MINUTES to COMPLETE LESSON)

<u>Entering Competencies</u>	(Previous skills/knowledge needed to begin this lesson)
<u>Objective</u>	(What the participants as trainees
<i>Behavior</i>	will be able to <u>do</u> ,
<i>Conditions</i>	under what conditions,
<i>Acceptable Performance</i>	with what degree of performance)
<u>Justification</u>	(Statement explaining the importance of the lesson and the value of the skill/knowledge to be gained)
<u>Evaluation Activities</u>	(The method or methods by which learners' successful completion of the lesson objectives is measured)
<u>Resources</u>	(Support materials used by the instructor during the lesson)
<u>Instructional Approach</u>	(Description of the sequence of activities through which the trainees will gain mastery of the objectives, stated in terms of what the instructor will do)

INSTRUCTIONAL PACKAGE WORKSHEET

CURRICULUM:

COURSE:

UNIT:

LESSON:

Estimated time:

Entering competenciesObjective*Behavior**Conditions**Acceptable Performance*JustificationEvaluation ActivitiesResourcesInstructional Approach

UNIT ONE: INTRODUCTION
LESSON 2 of 2: THE PURPOSE OF THIS WORKSHOP

Handout 1.1 Summary Quiz

Estimated time: 10-15 minutes

This quiz is designed to test your understanding of Unit One. Answer each question in the space provided.

1. What is the stated purpose of this workshop?
2. List the steps of the model of a systematic approach to instruction. Describe each.

ADVANCED INSTRUCTIONAL TECHNOLOGY

UNIT TWO
ANALYSIS - Unit Overview

Estimated time for unit - 2 hours 30 minutes

Overview

To design training relevant to a personnel performance problem, it is necessary to identify a specific, well-defined problem, determine the job or jobs involved, and identify all of the component tasks of those jobs. This unit reviews systematic procedures for both problem analysis and task analysis. The participants use worksheets to analyze a simulated problem and the job associated with that problem.

Entering Competencies

In addition to having completed Unit One of the workshop, the participants are expected to have attempted to solve training problems in simulated or real work situations and to be familiar with the concept of task analysis.

Summary of Objectives

By the end of this unit the participants will be able to:

- define personnel performance problems in detail using the Problem Definition Worksheet
- use the Job Task Summary Sheet and the Task Detailing Sheet to define a job in terms of its duties, their component tasks, and the steps required to complete the tasks.

Evaluation Activities

The participants will compare their analysis of the simulated problem to the results given by the instructor. The instructor will circulate among the participants to check their performance on the task analysis exercise.

References

Harless, J. H. An ounce of analysis (is worth a pound of objectives). McLean, VA: Harless Performance Guild, Inc., 1975.

Mager, R. F. & Beach, K. M., Jr. Developing vocational instruction. Belmont, CA: Fearon Publishers, 1967.

Mager, R. F. & Pipe, P. Analyzing performance problems (or 'you really oughta wanna').
Belmont, CA: Fearon Publishers, 1970.

Summary of Unit Activities

Lesson Title	Instructional Method	Time	Support Materials
1) Problem Analysis	Lecture, Guided Discussion	60 min.	Content Outline Figure 2.1-2.88 Handout 2.1
2) Task Analysis	Lecture, Assignment, Guided Discussion	90 min.	Content Outline Figure 2.9-2.16 Handout 2.2-2.4

UNIT TWO: ANALYSIS
LESSON 1 of 2: PROBLEM ANALYSIS

Estimated time: 60 minutes

Entering
Competencies

The participants should be able to describe the eight-step systematic approach to instruction. They are expected to have attempted to solve training problems in simulation or in actual work situations.

Objective

*Behavior
Conditions*

Acceptable Performance

By the conclusion of this lesson the participants will be able to define a personnel performance problem in detail, given the "Problem Definition Worksheet" and either a sample problem or one of their own choice. Each item of the worksheet will be completed and the problem will be defined accurately as determined by the instructor.

Justification

The systematic completion of a worksheet can be useful in guiding managers and trainers through the problem definition process. This lesson introduces this worksheet and provides for practice in using it. The worksheet allows trainers to compile information and make decisions necessary for continuing the systematic development of instruction.

Evaluation
Activities

Participants will compare their own work to the results given by the instructors.

Resources

Content Outline

- Figure 2.1 The Instructional Development Process - Analysis
 - 2.2 Problem Definition
 - 2.3 Categories of Problems
 - 2.4 Skill or Knowledge Problems
 - 2.5 Motivation Problems
 - 2.6 Environmental Problems
 - 2.7 Completed Worksheet (p. 1)
 - 2.8A Completed Worksheet (p. 2)
 - 2.8B Completed Worksheet (p. 3)

Handout 2.1 Problem Scenario

Instructional
Approach

The primary activity of this lesson is an exercise in which the participants analyze a problem situation using the Problem Definition Worksheet. In preparation for this exercise the definition of 'problem' and of the three categories of problems are reviewed. After explaining the use of the worksheet, offer assistance to those participants who request it as they work alone on their assignments. Finish the exercise by discussing a sample completed worksheet.

UNIT TWO: ANALYSIS
LESSON 1 of 2: PROBLEM ANALYSIS

Content Outline

Estimated time: 60 minutes

I. The Analysis Phase (lecture, 1 minute)

Figure 2.1 *Display the Instructional Development Process Model and point out that this unit is concerned with the two steps of the process which comprise the Analysis Phase: Define the Problem and Analyze the Tasks.*

II. Review of Problem Definition and Categories (lecture, 14 minutes)

A. Problem Definition

Figure 2.2 *Two major points should be made: 1) most problems are incorrectly stated in terms of their causes or proposed solutions, and 2) problems should be defined as discrepancies or deficiencies between the way things are and the way things should be.*

B. Categories of Problems

Begin by telling the participants that not all personnel performance problems require training. There are many different kinds of problems. However, they can be classified into three general categories.

Figure 2.3

1. Lack of skill or knowledge
2. Lack of motivation or incentive
3. Environmental constraints

Define each category of problems using the figures provided.

Figure 2.4

1. Skill or knowledge problems.
Using Figure 2.4 describe these problems as ones in which people do not know what to do or how to do it. They may want to perform a task but they simply do not have the training for it. These are the problems for which training solutions are indicated.

Figure 2.5

2. Motivation or incentive problems
Define motivation problems as cases where, for some reason or reasons, people do not want to perform the task. They may know how to do it. In these cases putting them through a training program will not solve the problem.

3. Environmental problems

Figure

2.6

Explain that environmental problems are typically cases in which the organization is hindering effective performance. These problems are not training problems either. Many times they are management problems.

III. Use of the Problem Definition Worksheet (assignment, 30 minutes)

Handout

2.1

Refer the participants to the copies of the worksheet in their reference manuals. Since the worksheet is self-explanatory and since many of the participants will have seen it before, you need not explain the instructions. Distribute copies of a problem scenario and have the participants spend thirty minutes analyzing the problem and filling out the worksheet. Circulate and give individual help as necessary.

IV. Discussion of a Sample Completed Worksheet (lecture and guided discussion, 15 minutes)

Figure

2.7

2.8A

2.8B

Show Figure 2.7, 2.8A, 2.8B COMPLETED WORKSHEET, and go through the sample responses to each item. In the discussion of the completed response to the problem scenario, point out that the most desirable solution in this case appears to be some form of training. Talk about, and ask for participants' examples of problems which tend to fall into columns "B" and "C". Discuss how training might be ineffective for employees who:

- are late for work
- do not wear or use safety equipment
- do not produce the desired amount of work because they are continually waiting for supplies or equipment

THE INSTRUCTIONAL DEVELOPMENT PROCESS

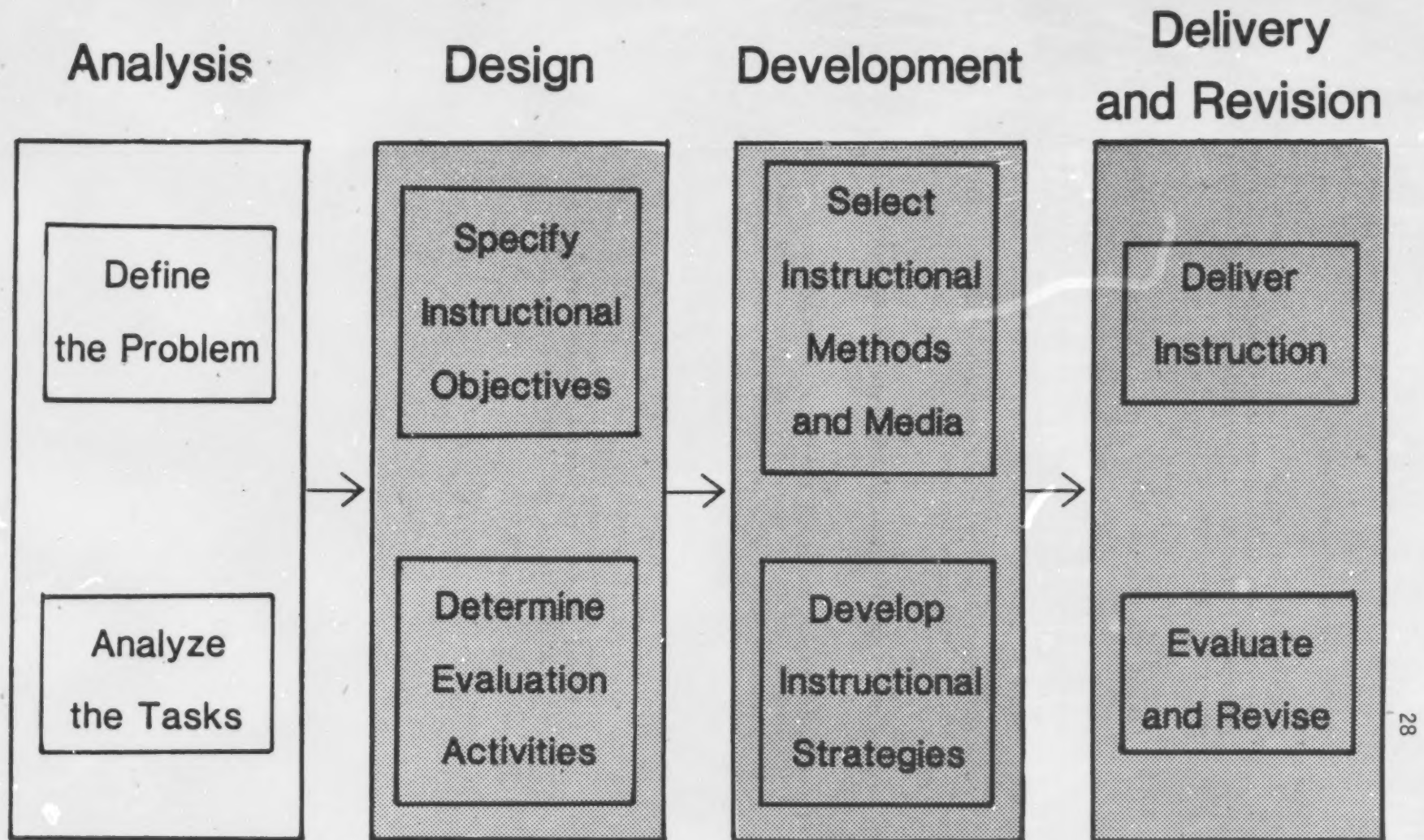


Figure 2.1/The Instructional Development Process/Analysis

PROBLEM

A discrepancy or deficiency
between the way things are
and the way things ought to be

CATEGORIES OF PROBLEMS

1. Lack of SKILL OR KNOWLEDGE
2. Lack of MOTIVATION OR INCENTIVE
3. ENVIRONMENTAL Constraints

Figure 2.3/Categories of Problems

SKILL OR KNOWLEDGE PROBLEMS

Include all cases where people do not
know what to do or how to do it.

MOTIVATION OR INCENTIVE PROBLEMS

Include situations where people
may know how to do something
but do not want to do it

ENVIRONMENTAL PROBLEMS

Involve situations where people know how to do something and want to do it but something about the work situation or organization will not let them perform effectively

PROBLEM DEFINITION WORKSHEET

- (1) Something has caused you to suspect a personnel performance problem. What is it? Describe the problem briefly in the space below.

Significant differences in pH data are being reported by alternating personnel. Inspection of other data does not explain the variations.

- (2) Identify the specific employees by job or position title (not name) that are involved in or affected by the problem described above.

Chemists in a wastewater treatment plant.

- (3) What are the characteristics of this problem? Check as many of the following items as seem relevant.

A	B	C
☐ new people have been hired	☒ undesirable attitudes toward work are present	☐ everything takes too long
☒ experienced people have new tasks or responsibilities	☐ people do not seem to want to work	☐ there is not enough time to do the work
☐ new equipment, facilities or technology is being used	☐ there are no rewards for doing well	☐ equipment frequently does not work or breaks down often
☐ new information exists	☐ employees provide poor service	☐ supplies sometimes run out
☐ output of work is low	☐ people feel that getting job done is not worth the effort	☐ new management or management policy exists
☐ people cannot perform a task effectively	☐ employees rarely receive feedback on their performance	☒ employees rarely talk to their superiors
☒ people do not know how to perform a task	☐ employees are punished for poor performance	☐ weak or inefficient management is apparent
		☐ people frequently seem to have nothing to do

- (4) In which of the columns (Step 3) are most of the items you checked located?

☒ A?

☐ B?

☐ C?

If A, you appear to have a problem where employees lack skill or knowledge.

If B, the immediate indications are that there is a motivation or incentive problem.

If C, it is likely that you are faced with an environmental problem. (Something in the work setting is preventing people from performing effectively.)

- (5) At this point, it is helpful to summarize the information gained in the previous steps. You should now be able to describe your problem in terms of WHO is affected (Step 2), WHAT is involved (Step 3), and WHY (Step 4). (You may also want to gather some further information about the specific nature of the problem at this point in order to develop more specific answers to the WHO, WHAT, and WHY questions.)

Write a clear summary of the problem in the following format:

WHO *A chemist in a wastewater trt. plant*
 WHAT *is not reporting correct pH values*
 WHY *because he cannot correctly use the meter.*

(If a variety of different jobs are affected by or involved in this problem, it may be useful to construct separate problem statements for each.)

- (6) Is a training program a relevant solution to the specific problem defined above? Consider the following points as appropriate to the identified cause of the problem (Step 4).

-If you identified your problem as involving an employee lack of skill or knowledge, you may want to consider a training program.

-If you decided that you have a motivation or incentive problem, you may want to discuss the situation with others to insure that this problem lends itself to a training solution. (Many times a change in organizational policy or management procedures is a more effective solution.)

-If the problem seems to involve something in the work environment, it is rather unlikely that a training program is a relevant

solution. (Investigate the situation further and consider direct changes in the work setting.)

Does a training program represent a relevant solution to your problem?

☒ Yes ☐ No

What other kinds of actions might be taken to address the problem in combination with or instead of a training program?

Additional strategies: *Cultivate a more open, confident attitude in the chemist by recognizing tasks he does correctly and well.*

- (7) If you are still certain that some form of training program is called for, proceed to analyze the training need for such a program using the Job Task Summary Sheet. Separate Job Task Summary Sheets must be completed for each job to be the subject of training.

UNIT TWO: LESSON 1 of 2
HANDOUT 2.1 Problem Scenario

PROBLEM SCENARIO

You are a supervisor in a wastewater treatment plant. When looking over pH data collected over a period of several weeks, you notice significant differences among data obtained by two chemists who alternate during the daytime shift. Inspection of other data during that period does not explain the variations in the pH data.

One chemist had several years of laboratory experience in the paint industry, but had not used a pH meter. He learned to use the equipment in your plant by reading the instruction manual for the meter. He is rather defensive when you try to discuss the stepwise procedure he uses to run pH tests, and says he is too busy to take time to discuss it.

The other chemist is a recent graduate of a technical school. His school record was good and he seems confident when discussing his conduct of the pH test.

You obtain a quality assurance sample for pH from your regional EPA Quality Assurance Coordinator and, disguising it as a regular sample, you have both chemists determine the pH. The technical school graduate reports the correct pH but the self-trained chemist reports a significantly incorrect value.

UNIT TWO: ANALYSIS
LESSON 2 of 2: TASK ANALYSIS

Estimated time: 90 minutes

Entering
Competencies

For this lesson the participants are expected to be familiar with the concepts of task analysis or needs assessment.

Objective

*Behavior
Conditions*

Acceptable Performance

By the conclusion of this lesson the participants will be able to complete a task analysis. Given a job description, the Job Task Summary Sheet, and the Task Detailing Sheet, the participants must list all of the tasks required of a job and all of the steps required to perform at least one task.

Justification

A thorough task analysis, including the listing, categorizing, and detailing of those tasks, is necessary for development of well-defined instructional objectives.

Evaluation
Activities

The instructor will circulate among the participants during the assignment segment of the lesson to ensure that the information on tasks and procedures is properly entered on the Job Task Summary Sheet and the Task Detailing Sheet.

Resources

Content Outline

Figure 2.9 Job - Definition

2.10 Job Description - Definition

2.11 Task - Definition

2.12 Task Analysis - Definition

2.13 Job Task Summary Sheet

2.14 Types of Behavior

2.15 Levels of Cognitive Behavior

2.16 Task Detailing Sheet

Handout 2.2 Sample Job Description

2.3 Completed Job Task Summary Sheet

2.4 Completed Task Detailing Sheet

Instructional
Approach

In this lesson the workshop participants are shown how to complete a step-by-step procedure for dividing a job list into its component tasks. They also learn how to further specify the tasks by detailing the steps required to complete them. The Job Task Summary Sheet and the Task Detailing Sheet are introduced and used to guide the process of task analysis.

Types and levels of behavior are explained. Participants will practice completing a task analysis using these materials.

1. Use Figure 2.9 to 2.12 to review the definitions of job, job description, task, and task analysis (15 minutes).
2. Have participants complete a Job Task Summary Sheet (Figure 2.13) for the sample job description provided (Handout 2.2). Distribute Handout 2.3 and review a sample Completed Job Task Summary Sheet (30 minutes).
3. Review the types and levels of behavior (Figure 2.14, 2.15) and direct participants to continue the task analysis using the Task Detailing Sheet (Figure 2.16). Distribute Handout 2.4 and review a sample Completed Task Detailing Sheet (45 minutes).

UNIT TWO: ANALYSIS
LESSON 2 of 2: TASK ANALYSIS

Content Outline

Estimated time: 90 minutes

I. Definition Review (lecture, 15 minutes)

Use Figure 2.9 to 2.12 to present the following definitions. Encourage participants to ask questions if they are unsure or confused about any of them.

Figure A. Job
2.9

The occupational title or position held by an employee.

Figure B. Job Description
2.10

A statement (or statements) outlining the areas of responsibility (duties) of a given position.

Figure C. Task
2.11

Each of the skills or operations which belong to a specific area of responsibility (duty). Each task usually consists of specific and distinct steps for its completion.

Figure D. Task Analysis
2.12

The act of dividing a task into all of its components. It results in a list of everything an employee must do to advance the work to completion.

II. Use of the Job Task Summary Sheet (JTSS) (assignment and guided discussion, 30 minutes)

A. Participant Exercise in using the Job Task Summary Sheet (JTSS).

Figure
2.13

Refer the participants to the Job Task Summary Sheet in their reference manuals. They will be familiar with it if they attended the basic level workshop. If anyone has questions try to clear up the confusion. Otherwise do not explain the items on the form. Distribute Handout 2.2, Sample Job Description and have the participants complete the JTSS.

Handout
2.2

B. Review of Sample Job Task Summary Sheet (JTSS)

Handout 2.3 After approximately fifteen minutes or when you see that most of the participants have finished, distribute Handout 2.3, completed JTSS. Explain that this is an example of how one trainer might have completed the JTSS. Discuss the sample answers and how they differ from or agree with those specified by the participants.

III. Use of the Task Detailing Sheet (TDS) (lecture, assignment and guided discussion, 45 minutes)

A. Types of Behavior

Use Figure 2.14 to define and differentiate among the three general categories of behavior.

COGNITIVE

Figure 2.14

Actions which involve knowing, understanding or applying information; remembering or using facts or ideas.

AFFECTIVE

Expressions of feeling or interest; the adoption of an attitude or belief; the motivation to do something.

PSYCHOMOTOR

Physical action, speed or agility; the performance of a particular body movement.

It is likely that someone in the workshop will raise a question about a behavior or action which requires two or even all three types of behavior. Explain that many activities involve all three types of behavior to some degree. The task "Check the filter" requires that employee knows what should be done (cognitive), chooses to do it (affective), and physically removes and inspects the filter (psychomotor). However in most training situations it is readily apparent that one type of behavior is the major concern. In this example the primary emphasis is on the cognitive behavior of knowing to check the filter.

B. Levels of Cognitive Behavior

Most training is concerned with cognitive behavior. However, not all cognitive behavior is alike. Introduce the participants to the four-level categorization of cognitive behavior shown in Figure 2.15.

Figure 2.15 Levels of Cognitive Behavior

Knowledge - ability to state a fact, symbol, definition, procedure, etc.

Comprehension - understanding the meaning of a piece of information; ability to explain or classify.

Application - using knowledge and comprehension to complete some activity; uses formula or rule, follows procedure.

Problem-solving - determining what must be done to perform some task - creates a procedure; combines rules or formulas into new rule.

C. Participant Exercise in Completing the Task Detailing Sheet (TDS)

Figure 2.16 *Direct the participants to complete the Task Detailing Sheet (in their reference manuals) for any one of the tasks they listed on their Job Task Summary Sheet or from the sample JTSS (Handout 2.3). Announce that you will later use a Task Detailing Sheet for the pH test as an example so they may want to choose the pH test for their exercise. Circulate to check individual work and answer questions.*

D. Review of Sample Task Detailing Sheet (TDS)

Handout 2.4 *Distribute Handout 2.4, completed TDS. Explain that this is an example of how one trainer might have completed the Task Detailing Sheet. Discuss the example and points of agreement or differences suggested by the participants.*

JOB

The occupational title or position
held by an employee

60

44

JOB DESCRIPTION

**A statement (or statements)
outlining the areas of
responsibility (duties) of a given position**

TASK

Each of the skills or operations which belong to a specific area of responsibility.

Each task usually consists of specific and distinct steps for its completion.

TASK ANALYSIS

The act of dividing a duty into all its components.

It results in a list
of everything an employee must do
to advance the work to completion.

JOB TASK SUMMARY SHEET

A. Job Title _____

1. Describe the job in terms of its major duties (2-4).

- A) _____
 B) _____
 C) _____
 D) _____

2. Which duties are most relevant to the problem identified in the Problem Definition Worksheet? Circle the relevant items on the list above.

B. For each duty chosen as relevant to the identified problem, prepare a list of the specific tasks which make up the activities of that duty. (Use additional pages if necessary to describe other duties/tasks.)

DUTY _____

- TASKS 1) _____
 2) _____
 3) _____
 4) _____
 5) _____
 6) _____
 7) _____

DUTY _____

- TASKS 1) _____
 2) _____
 3) _____
 4) _____
 5) _____
 6) _____
 7) _____

C. Should all of the tasks under each duty be considered as subjects for training programs? Circle all the tasks which require training attention, given your definition of the problem. (In deciding whether a specific task should be the subject of a training program, consider its relative importance, frequency of performance, and overall difficulty.)

D. Complete a Task Detailing Sheet for each task to be considered as the focus of a training activity.

TYPES OF BEHAVIOR

COGNITIVE

Actions which involve knowing, understanding, or applying information, remembering or using facts or ideas.

AFFECTIVE

Expressions of feeling or interest, the adoption of an attitude or belief, the motivation to do something.

PSYCHOMOTOR

Physical action, speed, or agility, the performances of a particular body movement.

LEVELS OF COGNITIVE BEHAVIOR

1. **KNOWLEDGE** – Able to state a fact, symbol, definition, etc.
2. **COMPREHENSION** – Understanding the meaning of information,
able to explain or clarify.
3. **APPLICATION** – Applying knowledge and comprehension to the
completion of some activity, following procedures.
4. **PROBLEM-SOLVING** – Determining what must be done
to perform some task.

TASK DETAILING SHEET

A. Write Job Title _____

B. Write Task _____

Complete steps C - F in the space below.

- C. List the specific steps required to perform the task.
 D. Check each step which needs to be taught.
 E. Indicate whether the checked steps primarily involve cognitive, affective, or psychomotor behavior.
 F. For a cognitive behavior, indicate the appropriate level of performance:
 Knowledge - ability to recall information or procedures
 Comprehension - ability to explain information or procedures
 Application - ability to use information or procedures to do something
 Problem Solving - ability to develop new information or procedures

C Steps Required to Perform Task	D Needs to be Taught	E Type of Behavior: Cognitive, Affective, Psychomotor	F Level of Cognitive Behavior: Know., Comp., Appl., P. S.
(1) _____			
(2) _____			
(3) _____			
(4) _____			
(5) _____			
(6) _____			
(7) _____			
(8) _____			
(9) _____			
(10) _____			
(11) _____			
(12) _____			

Figure 2.16 Task Detailing Sheet

UNIT TWO: LESSON 2 of 2
Handout 2.2 Sample Job Description

Job Title: CHEMIST, WASTEWATER TREATMENT PLANT

Duties: Supervises and/or performs specialized and complex chemical and physical tests and analyses of raw, partially treated, and treated wastewater and byproducts to determine efficiency of plant processes and insure that plant effluent meets local, state, and federal requirements. Conducts or supervises less complex routine tests. Supervises collection of laboratory samples. When laboratory technicians are present, supervises technicians and provides routine procedures to be followed. Evaluates and interprets test results, establishes test priorities, and prepares reports. Assembles data, maintains records, and prepares periodic reports. Sets up pilot processes when conducting research on improved procedures. Provides direct or indirect instructions to operating personnel regarding chemical requirements and adjustments, changes, or additions to various treatment processes.

JOB TASK SUMMARY SHEET

A. Job Title Chemist, Wastewater Treatment Plant

1. Describe the job in terms of its major duties (2-4).

- A) Supervises and/or performs tests and sample collections
- B) Evaluates procedures and data, and interprets data
- C) Establishes test priorities and pilot research processes
- D) Consults with and advises operating personnel

2. Which duties are most relevant to the problem identified in the Problem Definition Worksheet? Circle the relevant items on the list above.

B. For each duty chosen as relevant to the identified problem, prepare a list of the specific tasks which make up the activities of that duty. (Use additional pages if necessary to describe other duties/tasks.)

DUTY performs tests

- TASKS
- 1) performs suspended solids test
 - 2) performs pH test
 - 3) performs Biochemical Oxygen Demand Test
 - 4) performs residual chlorine test
 - 5) (others)
 - 6) (others)
 - 7) (others)

DUTY _____

- TASKS
- 1) _____
 - 2) _____
 - 3) _____
 - 4) _____
 - 5) _____
 - 6) _____
 - 7) _____

C. Should all of the tasks under each duty be considered as subjects for training programs? Circle all the tasks which require training attention, given your definition of the problem. (In deciding whether a specific task should be the subject of a training program, consider its relative importance, frequency of performance, and overall difficulty.)

D. Complete a Task Detailing Sheet for each task to be considered as the focus of a training activity.

TASK DETAILING SHEET

A. Write Job Title Chemist, Wastewater Treatment Plant

B. Write Task perform pH test

Complete steps C - F in the space below.

C. List the specific steps required to perform the task.

D. Check each step which needs to be taught.

E. Indicate whether the checked steps primarily involve cognitive, affective, or psychomotor behavior.

F. For a cognitive behavior, indicate the appropriate level of performance:

Knowledge - ability to recall information or procedures

Comprehension - ability to explain information or procedures

Application - ability to use information or procedures to do something

Problem Solving - ability to develop new information or procedures

C Steps Required to Perform Task	D Needs to be Taught	E Type of Behavior: Cognitive, Affective, Psychomotor	F Level of Cognitive Behavior: Know., Comp., Appl., P. S.
(1) <u>calibrate pH meter</u>	✓	<u>cognitive</u>	<u>application</u>
(2) <u>shake bottle of sample</u>		<u>psychomotor</u>	
(3) <u>measure sample into beaker</u>	✓	<u>cognitive</u>	<u>application</u>
(4) <u>remove electrodes from storage water</u>		<u>psychomotor</u>	
(5) <u>rinse and dry electrodes</u>	✓	<u>psychomotor</u>	
(6) <u>immerse electrodes in sample</u>		<u>psychomotor</u>	
(7) <u>turn pH meter on and wait at least one minute</u>		<u>psychomotor</u>	
(8) <u>agitate sample</u>		<u>psychomotor</u>	
(9) <u>measure temperature of sample</u>	✓	<u>cognitive</u>	<u>application</u>
(10) <u>record temperature</u>		<u>cognitive</u>	<u>application</u>
(11) <u>set pH meter to measured temperature</u>		<u>cognitive</u>	<u>application</u>
(12) <u>agitate sample</u>	73	<u>psychomotor</u>	

A. Write Job Title _____

B. Write Task

perform pH test (page 2)

Complete steps C - F in the space below.

C. List the specific steps required to perform the task.

D. Check each step which needs to be taught.

E. Indicate whether the checked steps primarily involve cognitive, affective, or psychomotor behavior.

F. For a cognitive behavior, indicate the appropriate level of performance:

Knowledge - ability to recall information or proceduresComprehension - ability to explain information or proceduresApplication - ability to use information or procedures to do somethingProblem Solving - ability to develop new information or procedures

C Steps Required to Perform Task	D Needs to be Taught	E Type of Behavior: Cognitive, Affective, Psychomotor	F Level of Cognitive Behavior: Know., Comp., Appl., P. S.
(13) <u>read pH from scale</u>	✓	<u>cognitive</u>	<u>application</u>
(14) <u>record pH</u>		<u>cognitive</u>	<u>application</u>
(15) <u>turn pH meter off</u>		<u>psychomotor</u>	
(16) <u>remove and rinse electrodes)</u>		<u>psychomotor</u>	
(17) <u>immerse electrodes) in water</u>		<u>psychomotor</u>	
(18) <u>clean and store equipment</u>		<u>psychomotor</u>	
(19) _____			
(20) _____			
(21) _____			
(22) _____			
(23) _____			
(24) _____			

ADVANCED INSTRUCTIONAL TECHNOLOGY

UNIT THREE

DESIGNING INSTRUCTIONAL OBJECTIVES - Unit Overview

Estimated time for unit - 2 hours 30 minutes

Overview

Once a training problem has been identified and the relevant jobs and tasks isolated, instructional objectives are written as blueprints for designing instruction. Participants learn to write well-defined objectives that indicate which learners will be able to perform what behaviors under what conditions with what degree of performance. Participants also learn how to write objectives for different types and levels of performance. The unit concludes with a discussion of hierarchies of objectives.

Entering Competencies

Participants should be able to analyze personnel performance problems and perform task analyses of the relevant jobs. Participants should also be able to recognize written objectives and understand their importance for instructional development.

Summary of Objectives

At the conclusion of this unit the participants will be able to:

- write behavioral objectives according to the four-part format
- write objectives for each type and performance level
- describe a hierarchy of objectives in terms of general goals and their subordinate skills.

Evaluation Activities

The evaluation activities for this unit include exercises contained in self-instructional assignments, with feedback from both the instructor and the assignment itself, and the instructor's assessment of the participant's mastery of the concept of hierarchical objectives to be determined from participation in a guided discussion.

References

Briggs, L. J. Organizing the course. In L. J. Briggs (Ed.), Instructional design: principles and applications. Englewood Cliffs, NJ: Educational Technology Publications, 1977.

Dick, W., and Carey, L. The systematic design of instruction. Glenview, IL: Scott, Foresman and Company, 1978.

Gronlund, N. E. Stating behavioral objectives for classroom instruction. New York: Macmillan, 1970.

Mager, R. F. Preparing instructional objectives. Belmont, CA: Fearon Publishers, 1962.

Summary of Unit Activities

Lesson Title	Instructional Methods	Time	Support Materials
1) Objectives Specification	Lecture, Assignment	120 min.	Content Outline Figure 3.1-3.4 Assignment 3.1, 3.2
2) Hierarchy of Objectives	Lecture, Guided discussion	30 min.	Content Outline Figure 3.5, 3.6

UNIT THREE: DESIGNING INSTRUCTIONAL OBJECTIVES
LESSON 1 of 2: OBJECTIVES SPECIFICATION

Estimated time: 120 minutes

Entering
Competencies

Participants are expected to understand the importance and usefulness of instructional objectives stated in behavioral terms. They should be able to recognize written objectives but may not necessarily be able to write them.

Objective

Behavior

Conditions

Acceptable Performance

By the end of this lesson the participants will be able to write instructional objectives according to the four-part format, given a task for which instruction is to be developed. The objectives will be complete and each specified behavior will be correct for the type and level of intended behavior.

Justification

The ability to specify the behavioral outcomes of instruction, and to specify them at a performance level appropriate to the task, are key skills in planning and preparing educational lessons and materials.

Evaluation
Activities

Participants will receive: immediate feedback on their own responses to exercises in a self-instructional assignment. The instructor will review participants' objectives written for a second assignment and provide feedback on the degree to which they are correct for the type and level of behavior.

Resources

Content Outline

- Figure 3.1 Instructional Objective
- 3.2 Importance of Objectives
- 3.3 Task Analyses vs. Objectives
- 3.4 Lesson Planning Form

Participant Reference Manual

- Assignment 3.1 Writing Instructional Objectives
- Assignment 3.2 Types and Levels of Objectives

Instructional
Approach

1. Review the definition and importance of objectives and compare them to the results of a task analysis (15 minutes).

2. Refer the participants to their reference manuals and have them complete the self-instructional assignment "Written Instructional Objectives" (45 minutes).
3. Have participants complete the readings and exercises "Types and Levels of Objectives" also in the Participant Reference Manual (30 minutes).
4. Collect and review participants' written objectives while they complete the first item on the Lesson Planning Form in their manuals (30 minutes).

UNIT THREE: DESIGNING INSTRUCTIONAL OBJECTIVES
LESSON 1 of 2: OBJECTIVES SPECIFICATION

Content Outline

Estimated time: 120 minutes

I. Review of the Definition and Importance of Objectives (lecture, 15 minutes)

A. Instructional Objective

Figure 3.1 *Use Figure 3.1 to present the definition of an instructional objective.*

A statement that describes an intended outcome of instruction in terms of learner behavior. It describes what a specific group or class of students should be able to do under specific conditions and how well it must be done.

B. Importance of Objectives

Figure 3.2 *Use Figure 3.2 to present four reasons why instructional objectives are useful for trainers. Ask participants to add others.*

1. Enable selection of the most appropriate lesson content for on-the-job training programs.
2. Permit selection of the most suitable instructional strategy.
3. Establish clear instructor and student goals.
4. Provide an objective basis for evaluating instruction.

C. Task Analyses vs. Instructional Objectives

Figure 3.3 *Use Figure 3.3 to show how behavioral objectives differ from behavioral tasks.*

1. Task Analyses Describe
 - a. Total job performance by a skilled person
 - b. All skills required
 - c. All job steps
2. Objectives Describe
 - a. Only the performance to be learned through instruction

- b. Only skills to be learned through instruction
- c. Only steps to be learned

II. Writing Instructional Objectives (assignment, 45 minutes)

Assign the participants to complete the self-instructional assignment "Writing Instructional Objectives" which is located in their reference manuals.

III. Types and Levels of Objectives (assignment, 30 minutes)

Have the participants read and complete the exercises in the self-instructional assignment "Types and Levels of Objectives" which is also located in the reference manuals.

IV. Use of the Lesson Planning Form (lecture and assignment, 30 minutes)

A. Presentation of the form

Figure 3.4 Use Figure 3.4 to display the Lesson Planning Form and explain that at this point they should be able to complete the items:

Job Title

Task

Step

Level of Behavior and

(1) Instructional Objective

B. Exercise in completing the Lesson Planning Form

Have the participants fill out the above-mentioned items on the Lesson Planning Form in their reference manuals. While they are performing this exercise, look over the objectives written during the last exercise. Correct any misimpressions the participants may have about what the objectives should contain. Use any remaining time to answer any questions about objective writing or the Lesson Planning Form.

INSTRUCTIONAL OBJECTIVE

A statement that describes an intended outcome of instruction in terms of learner behavior. It describes what a specific group or class of students should be able to do under specific conditions and how well it should be done.

IMPORTANCE OF OBJECTIVES

1. Enable the selection of the most appropriate lesson content for on-the-job training programs
2. Permit the selection of the most suitable instructional strategy
3. Establish clear instructor and student goals
4. Provide an objective basis for evaluating instruction

TASK ANALYSIS DESCRIBES

1. Total job performance
by skilled person
2. All skills required
3. All job steps

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OBJECTIVE DESCRIBES

1. Performance learned
through instruction
2. Only steps to be learned
3. Skills to be learned
through instruction

86

86

Figure 3.3/Task Analysis vs. Objectives

LESSON PLANNING FORM

Job Title _____ Task _____

Step _____

Type and Level of Behavior _____
(as appropriate)1) Instructional Objective:

Audience _____

Behavior _____

Conditions _____

Acceptable _____
Performance _____2) Entering Competencies: _____3) Evaluation Activities: _____4) Instructional Methods: *Using the Instructional Methods Selection Table for guidance, choose the method or methods most suitable for reaching the objective and describe how it will be used.*

METHOD(s) _____

5) Instructional Media. *Use the Media Selection Table to guide your choice of media for use in instruction. List all that apply.*

Appropriate Category of Media Specific Medium & Title Available

6) Sequence of Instructional Activities. *Outline the specific activities which comprise the instructional approach.*

1. _____

2. _____

3. _____

UNIT THREE: DESIGNING INSTRUCTIONAL OBJECTIVES
LESSON 2 of 2: HIERARCHY OF OBJECTIVES

Estimated time: 30 minutes

Entering
Competencies

Participants should be able to write instructional objectives according to the four-part format for the type and level of behavior intended.

Objective

*Behavior
Conditions
Acceptable Performance*

After completing this lesson the participants will be able to explain the concept of a hierarchy of objectives, from memory, in terms of general objectives and their subordinate skills.

Justification

Developers of training must be able to define objectives at a number of levels depending upon the kind of training required.

Evaluation
Activities

The instructor will assess the participants' understanding of this topic through their participation in the discussion of objectives hierarchies.

Resources

Content Outline
Figure 3.5 Hierarchy of Objectives
3.6 The Instructional Development Process-
Design

Instructional
Approach

This lesson primarily consists of a guided discussion in which the participants suggest examples of hierarchical objectives. The unit ends with another look at the instructional development process model to illustrate the progress of the workshop at this point.

UNIT THREE: DESIGNING INSTRUCTIONAL OBJECTIVES
LESSON 2 of 2: HIERARCHY OF OBJECTIVES

Content Outline

Estimated time: 30 minutes

I. Presentation and Discussion of Hierarchies (lecture and guided discussion, 25 minutes)

A. Description

Present the concept of hierarchical objectives including the following content.

Objectives may be written for a number of levels of specificity. However, there is no agreed-upon number of levels, from general to specific objectives, to serve as a guideline to the developer of instruction. One general rule when designing training is to begin at the highest or most global objective which is being required, and identify subordinate skills which must be achieved prior to achieving the main objective. In a hierarchy, each level of objectives is comprised of a larger number of subordinate skills.

1. The ultimate objective of a training program may be a thorough knowledge of a job with many skills such as a Wastewater Plant Operator. An objective written at this level might be called a curriculum objective. Skills obtained from several courses of study may be required to reach this goal.
2. Course objectives communicate to the learner general or global competencies to be achieved after successful completion of the course. Course objectives describe the nature of the skill, not the process involved in obtaining the skill. Each course objective will be made up of a number of unit objectives.
3. A unit objective is concerned with a cluster of common segments of a course, showing how to successfully achieve each course objective in some sequential form. In some cases, there is only one possible sequence of unit objectives depending on the prerequisite skills needed to complete each unit. However, in most cases some of the units might be parallel to other units in the information flow. Then it becomes the job of the instructor to sequence these units so that skills are acquired in the order needed. Each unit objective may consist of several modules of instruction.

4. Each module objective is concerned with a specific concept or skill. It might best be thought of as a task-level objective. It consists of a number of enabling objectives or steps. These steps are often clustered into lessons for purposes of efficiency of instruction.
5. A lesson is an arbitrary segment of study which may cover one or more enabling objectives or steps toward the completion of a task. Again, sequencing these objectives is of primary importance for the effective use of time.
6. The enabling objective is directed toward the learner in an effort to best communicate what the student is expected to do. Objectives of this level should be clear enough to minimize any doubt the learner might have concerning what he/she must do to reach that objective.

B. Discussion

Figure 3.5 Use Figure 3.5 to display a typical hierarchy. Lead a discussion in which the class provides examples of objectives or behaviors at each level in the figure. Continue eliciting examples until you believe the participants have mastered the concept.

II. The Instructional Development Process-Design (lecture, 5 minutes)

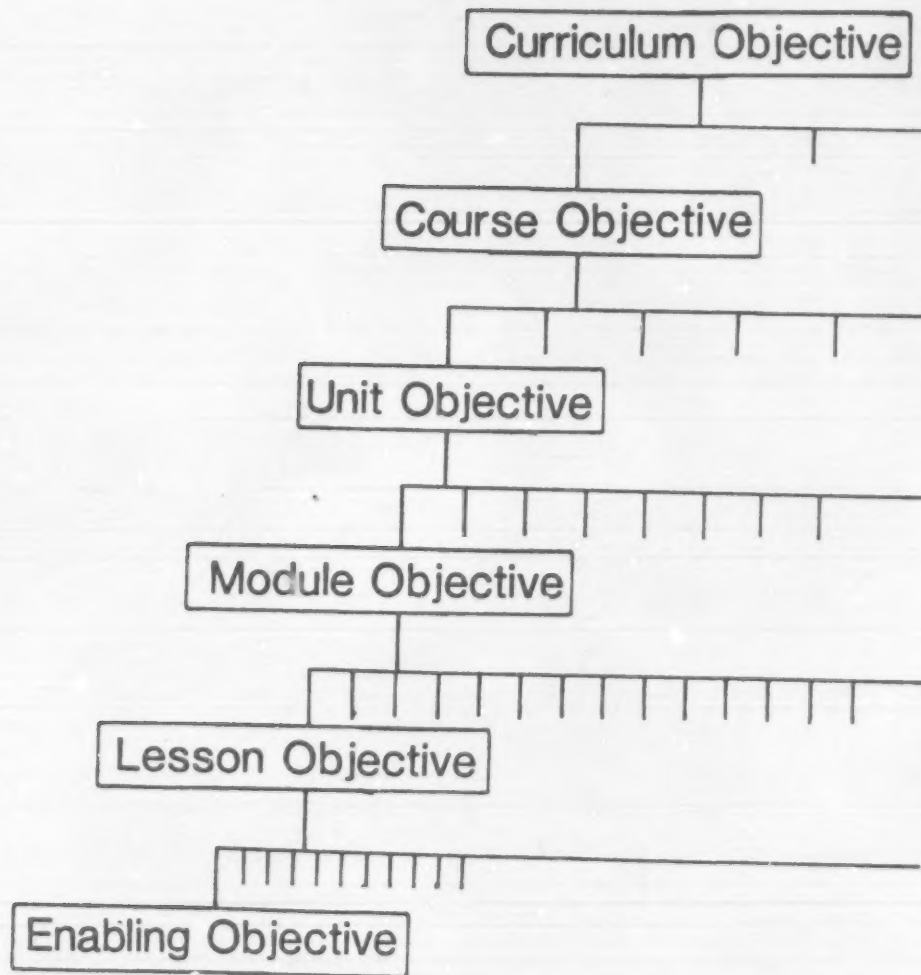
Figure 3.6 Use Figure 3.6 to illustrate the Design phase.

1. The step, Specify Instructional Objectives has just been completed.
2. The specified objectives are now used in the next step of the process in which the evaluation activities are determined.

HIERARCHY OF OBJECTIVES

LEVEL

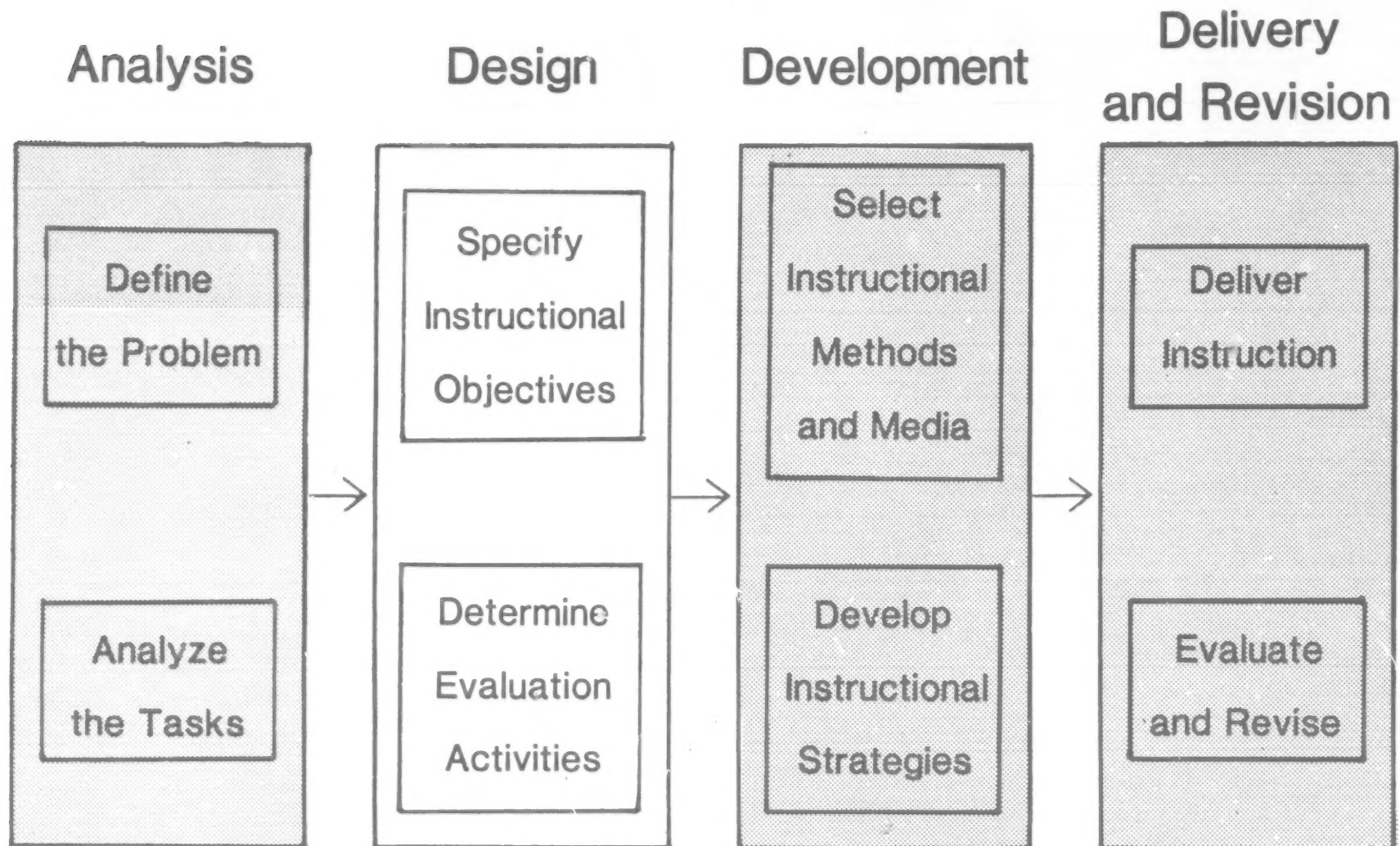
EXAMPLE



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Figure 3.5/Hierarchy of Objectives

THE INSTRUCTIONAL DEVELOPMENT PROCESS



ADVANCED INSTRUCTIONAL TECHNOLOGY

UNIT FOUR
DESIGNING EVALUATIONS - Unit Overview

Estimated time for unit - 5½ hours

Overview

Evaluation activities support training efforts in many ways. This unit focuses on two of the most important, but quite different, functions that evaluation can serve: the assessment of trainee achievement and the evaluation of instructional effectiveness.

The first three of the unit's four lessons focus on the use and design of achievement tests appropriate to job training programs. Lesson One reviews the role of evaluation in training and describes the characteristics of the fundamental tools of performance evaluation: written tests, check lists, and rating scales. The following lessons give particular attention to the design of criterion-referenced tests and principles for test item construction.

The fourth lesson is devoted to techniques for evaluating training materials and programs.

Entering
Competencies

Before beginning this unit, participants must be familiar with the concepts of task analysis and be able to construct learning objectives in behavioral terms.

Summary of
Objectives

By the conclusion of this unit, participants will be able to:

- describe the use and characteristics of simple written tests, check lists and rating scales for evaluating trainee performance
- describe the use of criterion-referenced testing in assessing training outcomes
- construct a Table of Specifications for a criterion-referenced test

-construct multiple-choice and short-answer test items

-explain the use of several techniques for evaluating instructional effectiveness.

Evaluation Activities

Achievement of the unit's objectives will be evaluated through participant performance on assignments and class discussions.

References

Bloom, B. S., Hastings, J. T., Madaus, G. F. Handbook on formative and summative evaluation of student learning. New York: McGraw-Hill, 1971.

Borich, G. D. Evaluating educational programs and products. Englewood Cliffs, NJ: Educational Technology, 1974.

Butler, E. C. Instructional systems development for vocational and technical training. Englewood Cliffs, NJ: Educational Technology, 1972.

Gronlund, N. E. Preparing criterion-referenced tests for classroom instruction. New York: Macmillan, 1973.

Summary of Unit Activities

Lesson Title	Instructional Methods	Time	Support Materials
1) Introduction to Evaluation, Written tests, Check Lists and Rating Scales	Lecture	40 min.	Content Outline Figure 4.1-4.8
2) Criterion-Referenced Testing	Lecture Discussion Assignments	125 min.	Content Outline Figure 4.9-4.11 Assignments 4.1, 4.2
3) Test Item Construction	Assignment	120 min.	Assignments 4.3, 4.4, 4.5
4) Evaluating Instructional Activities	Guided discussion	45 min.	Content Outline Handout 4.1

UNIT FOUR: DESIGNING EVALUATIONS
 LESSON 1 of 4: INTRODUCTION TO EVALUATION AND THE USE OF WRITTEN TESTS,
 CHECK LISTS AND RATING SCALES

Estimated time: 40 minutes

Entering
Competencies

Participants must be able to write instructional objectives according to the criteria presented in the previous lesson.

Objective

Behavior

After completing this lesson, participants will be able to describe the use and characteristics of simple written tests, check lists and rating scales for evaluating trainee performance.

Conditions

Acceptable Performance

Drawing upon their past educational experiences as instructors and students, workshop participants will be able to describe the characteristics of evaluation activities as they may be used in training and/or in the assessment of on-the-job performance.

Justification

The evaluation of trainee or employee skills, knowledge and performance is an important aspect of any training activity. While the concept of "evaluation" covers a wide range of activities, only the specific techniques of written tests, rating scales, and check lists will be considered here. This unit introduces the nature and use of these forms of evaluation.

Evaluation
Activities

A guided discussion at the end of the lesson provides an opportunity to review the lesson's content and ensure participant achievement of the objective.

Resources

Content Outline

- Figure 4.1 Evaluation and Training
- 4.2 The Instructional Development Process
- 4.3 Evaluation - Information Gathering
- 4.4 Uses of Written Tests
- 4.5 Types of Written Tests
- 4.6 Test Items Should...
- 4.7 Example Check List
- 4.8 Example Rating Scale

Instructional
Approach

Using the Content Outline and Figure 4.1-4.8 explain the nature and use of written tests, check lists and rating scales in evaluating training. Devote particular attention to the rules for constructing the various evaluation instruments.

End the lesson with a discussion of the advantages and limitations of different kinds of evaluation activities in training. Ask participants to draw upon their own educational experiences as instructors and students in making their observations.

UNIT FOUR: DESIGNING EVALUATIONS
 LESSON 1 of 4: INTRODUCTION TO EVALUATION AND THE USE OF WRITTEN TESTS,
 CHECK LISTS AND RATING SCALES

Content Outline

I. Overview of Unit (lecture, 5 minutes)

Figure 4.1 *Using the Unit Overview and lesson descriptions, outline the objectives, content, and major activities of the unit.*

Figure 4.2 *Use Figure 4.2 to explain how this unit addresses two completely different kinds of evaluation activity:*

- the assessment of trainee competencies or achievements (as per Step 4 of the model)
- the evaluation of instructional effectiveness (as per Step 8 of the model)

II. Introduction (lecture, 5 minutes)

Figure 4.3 A. Evaluation of trainee skills, knowledge and performance is an important aspect of any training activity. Evaluation may include a wide variety of activities designed to gather information about the skills, knowledge, or performance of an employee/trainee as a basis for making some training decisions. For example, evaluation activities may be used to:

- Determine existing capabilities of employees as a basis for identifying necessary training programs.
- Provide feedback to trainees during an instructional activity to let them know how they are progressing. (In the process of providing this feedback, evaluation activities also serve to provide opportunities for trainees to practice using a new skill.)
- Determine (or certify) the preparation of a trainee to do a particular job.
- Determine the effectiveness of training materials and programs.

B. There are many different kinds of evaluation activities (questionnaires, peer review, attitude scales, etc.) of which only a few of the most relevant ones for training purposes will be considered. Specifically:

1. Written tests - multiple choice and short answer items
2. Check lists and rating scales

III. Written Tests (lecture, 10 minutes)

A. Use

Figure
4.4

Written tests are perhaps the most common form of instructional evaluation. They are a useful means of evaluating cognitive skills such as:

- Knowledge of facts
- Understanding of an idea
- Ability to solve a logical or mathematical problem

B. Types

Figure
4.5

1. Written tests may be based upon the following formats:

- essays
- short answer (or fill-in-the-blank)
- multiple choice
- true/false

2. However, essay-type tests can be time consuming and difficult to analyze and true/false tests are usually too easy, so only short answer and multiple choice formats are recommended for most purposes

C. Test Planning

1. To plan the content of a written test, first consider the specific type and level of behavior you are concerned with. The test should require a demonstration of the behavior specified in the objective
2. Consider the relative importance of each specific objective to be tested. The more important an objective is, the more test items should be devoted to measuring its presence

D. General Rules for Writing Test Items

Figure
4.6

- The following rules apply to the construction of any type of test item. *Review each carefully.*

Construct test items:

1. So that there is no doubt about the behavior that is to be performed
2. So that they do not contain extraneous material
3. So that irrelevant factors do not keep students from responding correctly
4. So that they are at the proper level of difficulty

5. To call forth the specific behavior of the objective
6. So that there are enough items to thoroughly sample the students' performance of the intended behavior
7. So that the test item provides a positive test of the behavior. (That is, asking students to identify non-instances of a particular concept does not necessarily mean that they know the concept itself, etc.)
8. So that the correct answer would be agreed upon by any expert.
9. So that irrelevant clues do not "give away" the correct answer.
10. So that one item does not "give away" the answer to another item on the test.

IV. Check Lists and Rating Scales (lecture, 10 minutes)

A. Use

Check lists and rating scales are techniques for evaluating trainee (or employee) performance of a particular task, skill or procedure. They are particularly useful for evaluation of on-the-job performance. They enable the instructor and the trainee to see whether the "classroom learning" is correctly transferred to the real setting.

B. Nature of Check Lists and Rating Scales

Figure
4.7

1. Check list: a list of skills or tasks which the trainee is expected to demonstrate in the satisfactory performance of a job. This is a very useful technique for evaluating a complex job when there is a specific series of steps to be completed.

Figure
4.8

2. Rating scale: a list of skills or tasks with each so carefully defined as to permit the evaluator to judge the relative quality of the performance. This technique is useful when there is a concern for grading or ranking the relative quality of a performance.

Briefly compare the examples provided in the two figures.

3. General rules for constructing check lists and rating scales

Review each carefully.

- a. Define the behavior to be evaluated at an appropriate

level of detail. Use statements of objective or task analysis information as the basis for this.

- b. Determine standard for judgment of "good" performance
 - i. Is the concern simply with the presence or absence of a specific behavior? If so, then a check list may be most appropriate.
 - ii. Is the concern with rating or grading the quality of a behavior? If so, a rating scale is needed.
 - iii. For a rating scale, specific attention must be given to defining the variations in the conduct of that behavior that will determine the relative quality of the performance.
- c. Keep the check list and rating scale items simple and explicit. Do not construct items that require several simultaneous judgments about the behavior observed.

V. Discussion (10 minutes)

Draw upon the participants' experiences as trainees and trainers to discuss the advantages and limitations to the use of written tests, check lists and rating scales. Devote particular attention to the appropriate use of these techniques (particularly check lists and rating scales) for evaluating on-the-job performance.

EVALUATION AND TRAINING

1. Introduction to Evaluation
 - Written Tests, Checklists, and Rating Scales
2. Criterion-Referenced Testing
3. Test Item Construction
4. Evaluating Instructional Effectiveness

THE INSTRUCTIONAL DEVELOPMENT PROCESS

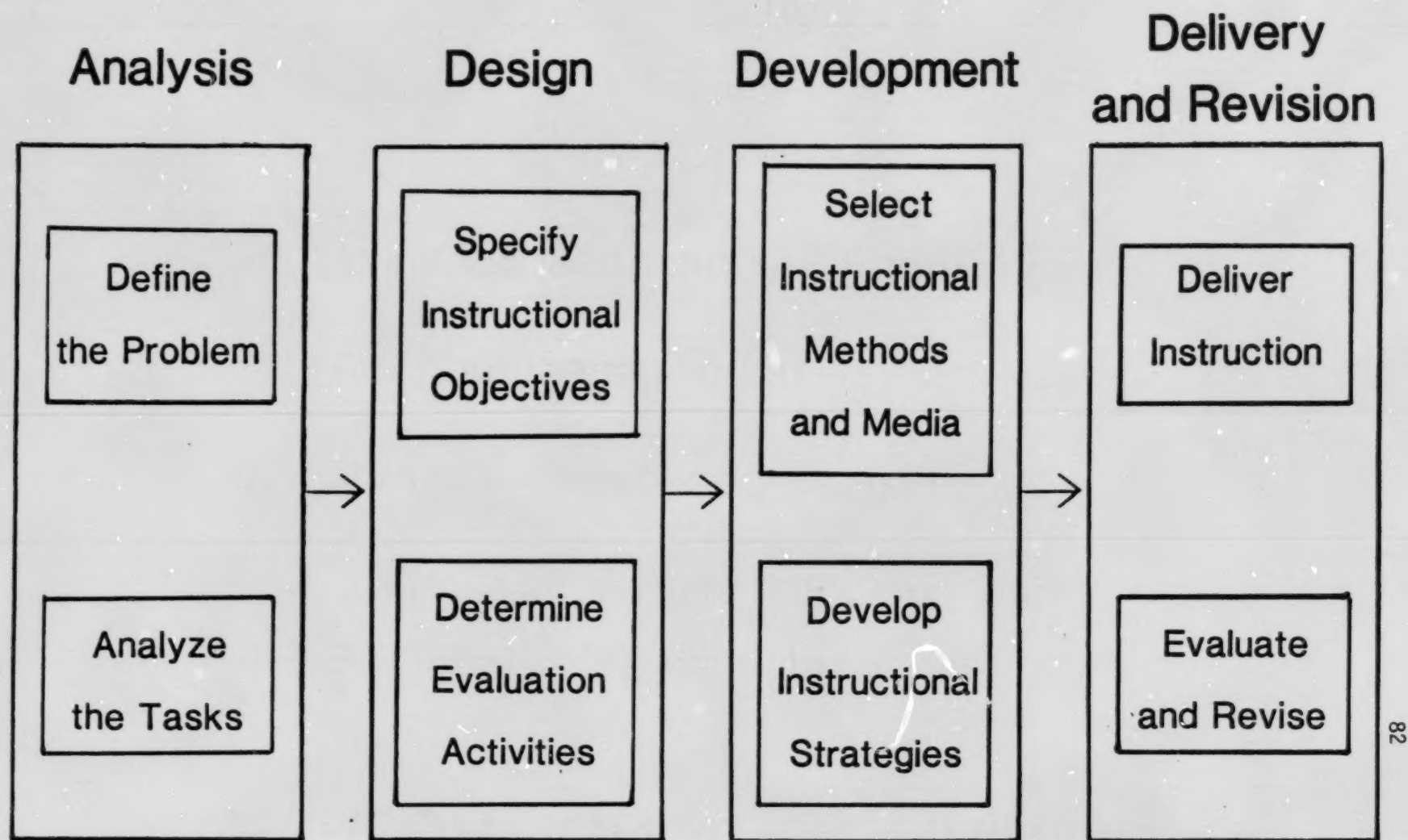


Figure 4.2/The Instructional Development Process

EVALUATION – INFORMATION GATHERING FOR DECISIONS

TRAINING-RELATED USES OF EVALUATION

To determine existing capabilities of employees

To provide feedback to trainees

To provide practice of a new skill

To certify employee competencies

To determine effectiveness of training activities

USES OF WRITTEN TESTS

For evaluating cognitive skills:

- Knowledge
- Comprehension
- Application
- Problem Solving

To provide quick feedback

To provide an impartial performance record

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Figure 4.4/Uses of Written Tests

TYPES OF WRITTEN TESTS

-Essays

-Short Answer

-True/False

-Multiple Choice

Figure 4.5/Types of Written Tests

TEST ITEMS SHOULD

- 1) Be clear
- 2) Be uncluttered
- 3) Be functional
- 4) Be at proper level of difficulty
- 5) Match the desired behavior
- 6) Thoroughly sample that behavior
- 7) Provide a positive test of that behavior
- 8) Have clearly correct answers
- 9) Not "give away" answer
- 10) Not "give away" answers to other items

Figure 4.6/Test Items Should . . .

EXAMPLE CHECK LIST: FOCUSING THE MICROSCOPE

Directions: Check each item only if performed properly. Check final square when each step has been performed properly and in correct sequence.

1. Snap low power objective into place
2. Adjust mirror
3. Assume starting point for focus
4. Place slide on stage
5. Adjust course adjustment screw to focus
6. Change to high power
7. Identify image on slide
8. Correct sequence

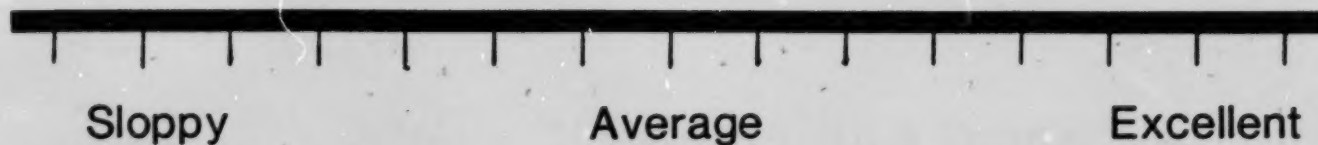
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EXAMPLE RATING SCALE: WORKMANSHIP

Directions: Place an X on the line at the point which
best describes this person on each dimension.

You may check anywhere along the line.

1) Quality of Work



2) Care of Tools

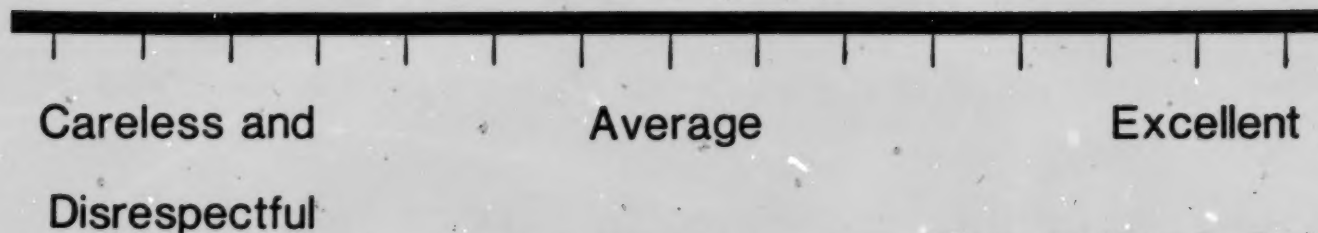


Figure 4.8/Example Rating Scale

UNIT FOUR: DESIGNING EVALUATIONS
LESSON 2 of 4: CRITERION-REFERENCED TESTING

Estimated time: 2 hours, 5 minutes

Entering
Competencies

Participants must already be familiar with the concepts of task analysis and be able to construct learning objectives in behavioral terms.

Objective

Behavior

Conditions

Acceptable Performance

By the end of this lesson, participants will be able to describe the use and complete the design of criterion-referenced tests for basic training activities. Given a particular training subject, participants will be able to make the necessary decisions to design a criterion-referenced test and construct a Table of Specifications.

Justification

For job training activities, it is of fundamental importance that either/or both the trainer and the trainee are able to assess the trainee's progress towards specific instructional objectives. Properly constructed criterion-referenced tests provide the best means of gathering this kind of performance information in the classroom.

Evaluation
Activities

Achievement of the lesson's objectives will be evaluated through the assignment and class discussions.

Resources

Content Outline

Figure 4.9 Use of Tests

4.10 Two Approaches to Testing

4.11 Requirements of Criterion-Referenced Testing

Assignment 4.1 Preparing Criterion-Referenced Tests

4.2 Exercise in Constructing Criterion-Referenced Tests - Part I

Instructional
Approach

This lesson is designed to present a complex subject in as clear and useful a manner as possible. A substantial portion of the lesson's content is covered through carefully designed assignments in the Participant Reference Manual, but the introductory lecture (Content Outline Section I) requires a thorough familiarity with the subject for successful delivery. The concept of criterion-referenced testing is very new to you, it is strongly recommended that you do some additional background reading in the

subject as part of your preparation. The best, most relevant, readable and concise source of additional information is the 1973 book by Gronlund. (See Unit Overview for references.) Chapter IX in the Butler text provides a much briefer introduction.

1. Following Section I of the Content Outline, complete the lecture and discussion regarding the nature of achievement testing in general and criterion-referenced testing in particular. Use Figure 4.9-4.11 to guide this discussion.
2. Have participants complete Assignment 4.1 in the Participant Reference Manual (30 minutes).
3. Organize participants into teams of two or three people and have each team complete the activities described in Assignment 4.2. After 40 minutes (or longer if necessary), have the teams report their plans for a criterion-referenced test and discuss the results of the exercise.
4. Conclude the lesson with a brief lecture (Section IV of the Content Outline) regarding the various uses of criterion-referenced tests.

UNIT FOUR: EVALUATION AND TRAINING
LESSON 2 of 4: CRITERION REFERENCED TESTING

Content Outline

I. Nature of Criterion-Referenced Testing (lecture/discussion, 20 minutes)

- A. What do tests do? *(Conduct a brief discussion oriented along the following lines.)*

Figure 4.9

- Determine entering competencies
- Assess student progress
- Certify achievement or possession of some skill or knowledge
- Grade students
- Provide practice in the use of some skill or knowledge

- B. Two major approaches to testing: Criterion-referenced and Norm-referenced testing. (While outwardly they look the same, they differ greatly in design and purpose.)

- Figure 4.10
1. Norm-referenced tests
 - a. The traditional "final exam" - it is designed to compare one student's performance against the performance of other students in the group. ("Norm" means "average" in the sense that the test enables a comparison between the average score and an individual student's score.)
 - b. Purposely intended to spread student performance out across some scale (i.e., 5% "A", 15% "B", 30% "C", etc.)
 - c. Useful for situations which require judgments that one student is better than another
 2. Criterion-referenced tests
 - a. Designed to compare the performance of every student against a predetermined objective (or "criterion") regarding desired capabilities or competencies. (The comparison is between observed student performance and desired performance and not between the performance of one student and the rest of the students.)
 - b. Not intended to spread student performance out across some scale. It would be perfectly acceptable to have 100% "A"s on a criterion-referenced test
 - c. Useful for situations where the concern is strictly with ability to do the job (to meet the criterion of expected job performance)

Discuss the differences between these two kinds of tests and ask participants to suggest specific examples of the appropriate use of each.

End by stressing that the recommended form of testing for most job training situations is criterion-referenced testing and discuss why this is so.

C. Requirements of Criterion-Referenced Testing¹

The intent is to obtain a clear picture of achievement relative to some clearly specified task. Therefore: *(Discuss and give examples of each requirement. See Gronlund, 1973, pp. 3-6 for ideas or Assignment 4.1 in Participant Reference Manual.)*

- Figure 4.11
1. The nature of the desired competencies must be clearly defined. (A good task analysis is invaluable here.)
 2. The instructional objectives must be defined in behavioral terms.
 3. The level of minimum acceptable achievement or competency must be clearly specified.
 4. A representative sample of performance must be obtained.
 5. The behavior called for in the test should match the desired behavior as closely as possible.
 6. Test results should be clearly reported in terms of what the student can do and the level of proficiency at which he/she can do it.

II. Preparing Criterion-Referenced Tests (Assignment 4.1, 30 minutes)

Refer participants to the reading assignment (Assignment 4.1) in the Participant Reference Manual. Answer any questions that arise from the reading. Make sure everyone clearly understands what a criterion-referenced test is and the steps involved in its preparation before going on. When the assignment is complete you may want to have several participants describe the seven-step process to make sure it is understood.

III. Exercise in Constructing Criterion-Referenced Tests (55 minutes)

Have participants work together in groups of two or three to complete Assignment 4.2. Allow 40 minutes for them to complete their Table of Specifications; then call on several teams to describe their results. Discuss any notable differences in their testing plans.

IV. Use of Criterion-Referenced Tests (guided discussion, 20 minutes)

Conduct a brief discussion of how criterion-referenced testing applies to each of the major purposes served by testing in instructional activities (as identified in the discussion under IIA and Figure 4.9 above).

¹Note: If in the course of this lecture you get questioned regarding the use of criterion-referenced tests in this workshop, you might explain that such tests could not be used since no levels of minimum acceptable performance could be set. The workshop's intent is simply to build upon participants' existing instructional technology skills to help them be as effective as possible. Evaluation activities in this workshop are used almost exclusively to provide feedback and practice opportunities to participants rather than judge the quality of their performance or extent of their achievement.

Some suggested points to raise in these discussions are noted in parentheses below. For further information in this area, see Chapter Six of Gronlund's (1973) book.

A. To Determine Entering Competencies

(Criterion-referenced tests provide a good way to check whether students have the prerequisite capabilities to successfully complete the instruction. The criterion-referenced approach is also useful for pretest-post-test comparisons designed to illustrate learning gain.)

B. To Assess Progress

(Criterion-referenced tests provide clear feedback on student progress towards a clear goal.)

C. To Certify Achievement

(Since criterion-referenced tests are designed to match the behavior called for on the test as closely as possible to the desired behavior, and the results are reported in terms of level of proficiency in a given area, criterion-referenced tests are highly useful as a formal record for certifying particular achievement.)

D. To Rank or Grade Students

(While criterion-referenced tests are not specifically designed to be used to rank or grade students, they can serve such purposes as long as a normal distribution of test results is not required.)

E. To Provide Practice

(The careful attention to the match between testing behaviors and the desired final performance makes criterion-referenced testing particularly useful in this regard.)

F. To Certify Capabilities On-the-Job

(Criterion-referenced tests can be useful to insure that job-related knowledge of employees remains at expected levels over time.)

COMMON USES OF TESTS

To determine entering competencies

To assess progress

To certify achievement

To rank or grade students

To provide practice

TWO APPROACHES TO TESTING

Norm-Referenced

Criterion-Referenced

REQUIRMENTS OF CRITERION-REFERENCED TESTING

1. Desired competencies defined
2. Behaviorally-stated objectives
3. Clear level of minimum required performance
4. Representative sample of performance
5. Test behavior matches real behavior
6. Clear report of results

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UNIT FOUR: DESIGNING EVALUATIONS
LESSON 3 of 4: TEST ITEM CONSTRUCTION

Estimated time: 2 hours *Parts of this lesson (Assignments 4.3 and 4.4) are optional and may be omitted if participants already possess adequate test writing skills- in which case this lesson will only be one hour in length.*

Entering
Competencies

Participants should be familiar with the use of testing in training activities. They should also be able to construct learning objectives in behavioral terms (and should have completed the first lesson of this unit).

Objective

After completing this lesson, participants will be able to plan and construct tests based upon short-answer and multiple-choice type items. Working from a statement of instructional objectives, participants will create a short test to measure the achievement of those objectives using well-constructed short-answer and multiple-choice items.

Justification

Creation of criterion-referenced tests (or any other test) depends upon adequate skill in test item construction.

Evaluation
Activities

Achievement of the lesson's objective will be evaluated (and any corrective feedback given) on the basis of the lesson's final assignment.

Resources

Participant Reference Manual
Assignment 4.3 Constructing Multiple-Choice Items
4.4 Constructing Short-answer Items
4.5 Exercise in Constructing Criterion-Referenced Tests - Part II

Instructional
Approach

This lesson's main instructional activities consist of the readings and exercises contained in Assignments 4.3, 4.4, and 4.5 in the Participant Reference Manual. Your main instructional responsibilities are to introduce the lesson, answer questions as the participants work with the materials, and review the results of the assignments in class.

(Assignments 4.3 and 4.4 are optional depending on the background of participants. Assignment 4.5 is not.)

1. Introduce the lesson and explain its objective and instructional activities.
2. Direct participants to complete Assignment 4.3 on multiple-choice items. Note that they should plan their work to complete the assignment in 20 minutes. Remain available to answer questions as they work. (See the Content Outline for Unit 5 in the Staff Guide for Basic Instructional Technology workshop if you want further material on multiple-choice or short-answer items.
3. After 25 minutes, conduct a brief discussion on the assignment and their responses to the exercise.
4. Direct participants to complete Assignment 4.4 on short-answer items. This assignment should also take about 20 minutes. When it is complete, again conduct a brief discussion on the assignment.
5. Finally, have participants form into the same small (2 or 3 person) teams as in Lesson 1 and have them complete Assignment 4.5 based on the Table of Specifications they developed for a criterion-referenced test (in Assignment 4.2). Allow 30 minutes for this activity.
6. Have the teams exchange copies of the tests and critique them following the "Check List for Evaluating Criterion-Referenced Tests" (from Assignment 4.1). Discuss any characteristic problems that arise with the class as whole. (30 minutes).

UNIT FOUR: DESIGNING EVALUATIONS
LESSON 4 of 4: EVALUATING INSTRUCTIONAL ACTIVITIES

Estimated time: 45 minutes

Entering
Competencies

Participants should be able to describe the instructional development process reviewed in Unit One.

Objective

Behavior

Conditions

Acceptable Performance

By the conclusion of this lesson participants will be able to describe the conduct of evaluation activities intended to provide feedback to instructor on the effectiveness of a particular training activity. Given a training activity similar to the present workshop, participants will describe the use of questionnaires (like those provided in the Participant Reference Manual) for obtaining trainee feedback on instructional effectiveness.

Justification

The final step in any systematic approach to training involves gathering evaluation data on the instructional effectiveness of the training activity in order to revise and improve future training activities. This lesson introduces the concepts and techniques of this kind of evaluation activity.

Evaluation
Activities

The instructor will insure that participants have accomplished the lesson's objectives through participation in the lesson's discussions.

Resources

Content Outline
Handout 4.1 Participant Questionnaire
Participant Reference Manual
Course Evaluation Questionnaires (for lecture, laboratory or seminar courses)

Instructional
Approach

The best way to introduce the subject of this lesson is to distribute Handout 4.1 and have participants complete the questionnaire using their reactions to the workshop to this point as the basis for the evaluation. However, if you feel that focusing attention on their reactions to this workshop could be disruptive to the lessons instructional content, you may wish to have them review the form without completing it. An example of a more detailed evaluation instrument is provided in the Participant Reference Manual.

1. Distribute copies of Handout 4.1 and have participants complete questionnaire by considering their experience in this workshop so far.
2. Collect the questionnaires after a few minutes and discuss how the information obtained could be used to revise the training. (If time permits, you may actually want to report the findings on this questionnaire.)
3. Using Section II of the Content Outline, conduct a brief lecture/discussion on the evaluation of instructional effectiveness. Refer to the sample instruments contained in the Participant Reference Manual.

UNIT FOUR: DESIGNING EVALUATIONS
LESSON 4 of 4: EVALUATING INSTRUCTIONAL ACTIVITIES

Content Outline

I. Introduction (10 minutes)

- A. Explain that in addition to assessing training outcomes in terms of student achievement, evaluation activities may also be designed to provide feedback to the instructor on the effectiveness of the training from the students' point of view. Note that this kind of feedback provides an important basis for the revision and improvement of instructional efforts. Finally, review the lesson's objective.

Distribute Handout 4.1 as an example of a very simple way to obtain feedback on the effectiveness of instruction. Ask participants to complete the questionnaire using their experience in this workshop (or specifically this unit) as the subject for their evaluation. Allow five minutes to complete the form and then collect them. (If you wish to omit the actual completion of the questionnaire, you may simply review it as part of the following discussion.)

II. Evaluating Instructional Effectiveness (guided discussion, 35 minutes)

- A. Have participants review the example evaluation instruments provided in the Participant Reference Manual (Course Evaluation Questionnaires).
- B. Discuss specific ways in which collecting such evaluation information provides an important basis for making decisions about future instructional activities.
- C. Review the specific items in Handout 4.1 and ask for comments on how this specific information could lead to training revisions.
- D. Ask for suggestions on other kinds of evaluation techniques that could be used to gather information on instructional effectiveness (e.g., personal interviews, peer reviews by other instructors).
- E. Consider the use of information gathered from criterion-referenced tests on the performance of trainees in the evaluation of the effectiveness of the instruction.
- F. Conclude by noting that instructors frequently devise their own questionnaires to fit their situations. Review the following principles for the design and use of questionnaires in the evaluation of instructional effectiveness.

1. Decide what you want to find out and design simple items or questions which match those concerns.
2. Design the questionnaire so that trainee responses can be easily tabulated.
3. Do not require trainees to sign their names on the questionnaires.
4. Allow space on the form for additional comments from the trainees.
5. Allow adequate time to complete the forms. Do not "squeeze" the evaluation into the last few minutes of the workshop as people are getting ready to leave.

UNIT FOUR: DESIGNING EVALUATIONS
LESSON 4 of 4: EVALUATING INSTRUCTIONAL ACTIVITIES

HANDOUT 4.1

PARTICIPANT QUESTIONNAIRE

Date _____

Unit Title _____

Workshop Title _____

Instructor _____

Check the most appropriate response to each of the following items.

1. Given my previous background in this subject, most of this material has been:

- ☐ Too advanced
☐ Too basic
☐ Just right

2. I found that the instruction was paced:

- ☐ Much too fast
☐ A little too fast
☐ Just right
☐ A little too slow
☐ Much too slow

3. I feel that this subject was:

- ☐ Very important
☐ Important
☐ Somewhat unimportant
☐ Irrelevant

4. I learned:

- ☐ Quite a lot
☐ Some things
☐ Nothing

5. Generally, the instructional activities were:

- ☐ Very clear
☐ Adequate
☐ Somewhat confusing
☐ Confusing

6. Overall, I would rate this training activity as:

- ☐ Excellent
☐ Good
☐ Fair
☐ Poor

Use the back of this form to offer at least one specific comment on your reactions to or experience in this training activity. Thank you.

ADVANCED INSTRUCTIONAL TECHNOLOGY

UNIT FIVE

SELECTING INSTRUCTIONAL METHODS - Unit Overview

Estimated time for unit - 2 hours

Overview

This unit provides a trainer with some assistance in deciding what methods should be used to deliver instruction for specific types and levels of behavior. The unit consists of a review of the four types of instructional methods in a reading and in group discussion. A second assignment provides practice in selecting methods for specific types and levels of behavior. A discussion of participants' choices concludes the unit.

Entering Competencies

Before beginning this unit the participants must be able to classify instructional objectives according to the type and level of behavior required.

Summary of Objectives

By the end of this unit, the participants will be able to:

- list and describe the four types of instructional methods
- give at least two advantages and disadvantages of each
- use the Instructional Methods Selection Table to select instructional methods for specific types and levels of behavior.

Evaluation Activities

The participants' responses to an exercise will be discussed as part of Lesson Two.

References

Gagne, R. M. & Briggs, L. J. Principles of instructional design. New York: Holt, Rinehart and Winston, 1974.

Gerlach, V. S. & Ely, D. P. Teaching and media: a systematic approach. Englewood Cliffs, NJ: Prentice-Hall, 1971.

Popham, W. J. & Baker, E. L. Systematic instruction. Englewood Cliffs, NJ: Prentice-Hall, 1970.

Summary of Unit Activities

Lesson Title	Instructional Methods	Time	Support Materials
1) Four Types of Instructional Methods	Assignment, Guided Discussion	50 min.	Assignment 5.1
2) Selecting Methods for Specific Behavior	Assignment, Guided Discussion	70 min.	Assignment 5.2 (plus Instructor's Answer Key) Instructional Methods Selection Table

UNIT FIVE: SELECTING INSTRUCTIONAL METHODS
 LESSON 1 of 2: FOUR TYPES OF INSTRUCTIONAL METHODS

Estimated time: 50 minutes

Entering
Competencies

The participants must be able to classify instructional objectives according to the type and level of behavior required.

Objective

*Behavior
Conditions*

Acceptable Performance

By the conclusion of this lesson, participants will be able to describe four types of instructional methods. Participants will orally respond to the name of a method by giving a brief definition and a list of the advantages and disadvantages of employing each method.

Justification

Instructional methods have different degrees of effectiveness in different instructional environments. An understanding of the strengths and weaknesses of each method is important for trainees and teachers.

Evaluation
Activities

Participant discussion will serve as the evaluation activity for this lesson.

Resources

Participant Reference Manual
 Assignment 5.1 Four Types of Instructional
 Methods

Instructional
Approach

This lesson contains two activities, a reading on the types of instructional methods and a discussion of the usefulness of each method in different instructional situations.

1. Have participants complete Assignment 5.1. Allow participants twenty minutes to study the content contained.
2. Lead a discussion (thirty minutes) of the methods covering the meaning of each, the differences among them, and their usefulness in different instructional situations. Try to ascertain participants' comprehension of each.

UNIT FIVE: SELECTING INSTRUCTIONAL METHODS
 LESSON 2 of 2: SELECTING METHODS FOR SPECIFIC BEHAVIOR

Estimated time: 70 minutes

Entering
Competencies

The participants must be able to classify instructional objectives according to the type and level of behavior required, and be able to describe each of the four types of instructional methods.

Objective

Behavior

Conditions

Acceptable Performance

By the completion of this lesson, participants will be able to select instructional methods for specific types of behavior with the use of the Instructional Methods Selection Table. The methods chosen will be appropriate for the behavior to be learned.

Justification

Instructional methods each have their own particular strengths and weaknesses. When designing instruction, it is helpful to have some guidance in choosing the most appropriate method for delivering it. This unit provides some help in this area so that methods are not arbitrarily chosen.

Evaluation
Activities

The instructor will review the participants' responses to the exercise (in Assignment 5.2) in a summary discussion.

Resources

Participant Reference Manuals
 Assignment 5.2 Exercise in Selecting Instructional Methods
 Instructional Methods Selection Table
 Instructor's Answer Key

Instructional
Approach

1. Have participants complete Assignment 5.2 Exercise in Selecting Instructional Methods. Allow participants approximately forty minutes to complete the exercise.
2. Lead a discussion of the items and participants' responses. An answer key is included for your use. It is likely that some participants will chose methods other than those suggested. Ask participants to defend their selections. This discussion should be limited to thirty minutes.

INSTRUCTIONAL METHODS SELECTION TABLE

Types of Behavior	Instructional Method			
	LECTURE	DEMONSTRATION	GUIDED DISCUSSION	ADAPTIVE INSTRUCTION*
COGNITIVE, Knowledge	Appropriate for teaching facts	Generally not useful	Generally not useful	Useful and appropriate for conveying factual information
COGNITIVE, Comprehension	Appropriate	Useful as a supportive method to reinforce concept-using	Generally not useful	Appropriate
COGNITIVE, Application	Appropriate for initial presentation of rules	Most appropriate method for teaching rule-using	Generally not useful	Appropriate for initial presentation of rules
COGNITIVE, Problem-Solving	Generally not useful	Useful for problem-solving instruction	Useful and appropriate for developing problem-solving skills	Exercises are useful for teaching problem-solving
PSYCHOMOTOR	Useful only in support of a demonstration	Live or simulated demonstrations are the most effective method for teaching motor skills	Generally not useful	Useful only in support of a demonstration
AFFECTIVE	Usually not effective for motivating trainees or changing attitudes about something	Modelling and simulations are useful for forming attitudes	Group activities such as role-playing are often useful for attitude formation	Generally not useful

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UNIT FIVE: SELECTING INSTRUCTIONAL METHODS
 LESSON 2 of 2: SELECTING METHODS FOR SPECIFIC BEHAVIOR

ASSIGNMENT 5.2: EXERCISE IN SELECTING INSTRUCTIONAL METHODS

Instructor's ANSWER KEY

1. My students must be able to check automatic flow recording equipment for correct operation.

Cognitive, application. The behavior required is the ability to follow a rule or apply a procedure. An appropriate instructional method would be a demonstration of how to check the equipment, perhaps preceded by a written or verbal description of the procedure.

2. My students must be able to list fifteen conversion factors commonly used in day-to-day treatment operations.

Cognitive, knowledge. The students are expected to recall facts from memory. Appropriate methods for conveying facts are lecture and adaptive instruction.

3. My students must be courteous to other employees.

Affective. The students are expected to adopt an attitude toward the way in which they work. A real or simulated demonstration of the expected behavior would be most useful in forming the desired attitude. A lecture or reading designed to tell students to be courteous, to describe the value of being courteous, etc., is usually not effective for this purpose.

4. My students must be able to describe the internal construction of a large piece of plant equipment.

Cognitive, comprehension. The behavior called for is more than a simple recall of facts. The student is required to understand or comprehend something well enough so that he or she can explain it to others. Lectures and Adaptive Instruction are appropriate methods of instruction.

5. My students must know how to determine settleable solids, ml/liter.

Cognitive, application. A demonstration of the procedure would be most effective for insuring that the procedure is learned.

ADVANCED INSTRUCTIONAL TECHNOLOGY

UNIT SIX
SELECTING MEDIA FOR INSTRUCTION - Unit Overview

Estimated time for unit - 2 hours

Overview

This unit provides trainers with some guidelines for choosing media when designing instruction. A lecture covers the kinds of media which may be useful in training and how this media may be classified. A Media Selection Table is provided and an assignment allows for practice in using it.

Entering Competencies

The participants must be able to classify behavior by type and level and select instructional methods for each.

Summary of Objectives

By the end of this unit the participants will be able to:

- list the five categories of media with examples of each
- use the Media Selection Table to choose media for specific instructional content.

Evaluation Activities

Evaluation includes a media quiz in Lesson One and a discussion of participants' responses to an exercise in Lesson Two.

References

Merrill, M. D. and Goodman, R. I. Selecting instructional strategies and media: a plan to begin. Provo, Utah: National Special Media Institutes, 1972.

Summary of Unit Activities

Lesson Title	Instructional Methods	Time	Support Materials
1) Categories of Media	Lecture, Guided Discussion, Assignment	45 min.	Content Outline Figure 6.1-6.7 Handout 6.1
2) Selecting Educational Media for Instruction	Assignment, Guided Discussion	75 min.	Assignment 6.1 (plus Instructor's Answer Key) Media Selection Table

UNIT SIX: SELECTING MEDIA FOR INSTRUCTION
LESSON 1 of 2: CATEGORIES OF MEDIA

Estimated time: 45 minutes

Entering
Competencies

There are no specific prerequisites for beginning this lesson.

Objective

*Behavior
Conditions*

Acceptable Performance

By the end of this lesson the participants will be able to list and give examples of the five categories of media from memory. All five categories will be named and there will be at least two examples of each.

Justification

When selecting media for use in instruction most people think only of slides or films. Furthermore, many trainers do not consciously think of each medium as having specific characteristics which make it particularly suited to some kinds of instruction and not appropriate for others. This lesson presents a list of a number of usable media and provides a scheme for classifying them according to shared characteristics.

Evaluation
Activities

This lesson includes a quiz on media categories and examples.

Resources

Content Outline

- Figure 6.1 Medium of Instruction-Definitions
6.2 Categories of Media
6.3 Objects
6.4 Still Pictures
6.5 Moving Pictures
6.6 Audio Media
6.7 Written Materials

Handout 6.1 Media Quiz

Instructional
Approach

The instructor's activities for this lesson consist of defining media, presenting them in five categories, and leading a discussion on 1) what media belong in these categories, 2) what makes the categories different, and 3) for what types of instruction each category is most suited. Conclude this lesson by having participants complete Handout 6.1, Media Quiz.

UNIT SIX: SELECTING MEDIA FOR INSTRUCTION
LESSON 1 of 2: CATEGORIES OF MEDIA

Content Outline

Estimated time: 45 minutes

I. Definition of Medium (lecture, 5 minutes)

Use Figure 6.1 to define these terms.

- Figure 6.1 Medium of instruction
-a channel of communication through which instruction is presented to the learner

Explain that "media" means all of the ways in which instruction can be conveyed to the learner. If the participants immediately think of film or television when they hear the word "media" it is because that is the most common context in which that term is used.

II. Discussion of Categories of Media (guided discussion, 25 minutes)

Use Figure 6.2 to present the list of media categories.

- Figure 6.2 Categories of Media
1. Objects
 2. Still pictures
 3. Moving pictures
 4. Audio media
 5. Written materials

Use Figure 6.3-6.7 to lead a discussion of the media which belong in these categories (listed below).

Media by Categories

- Figure 6.3 1. Objects
- Real things
 - People
 - Models

- Figure 6.4 2. Still Pictures
- Flat pictures
 - 35mm color slides
 - Filmstrips
 - Overhead transparencies
 - Chalkboard
 - Charts and posters

Figure
6.5

3. Moving Pictures

Commercially-produced 16mm films
Single concept 8mm films
Locally-produced films
Instructional Television

Figure
6.6

4. Audio Media

People
Professionally-produced audio materials
Locally-produced audio materials

Figure
6.7

5. Written Materials

Text and reference books
Workbooks
Periodicals
Teacher-produced handouts

Then discuss how the differences among these categories suggest that they are suitable for teaching different types and levels of behavior. The following outline is included to assist you in this discussion. It is not intended to be presented in full.

1. Objects

- a. real things - provide an opportunity to see, feel, manipulate and use the actual objects connected with the specified objective
- b. people - useful objects for instruction, especially in the psychomotor area
- c. models - may be appropriate when real things are not readily accessible or are too big, small, complex or expensive

2. Still Pictures

- a. flat pictures - especially useful for individual study
- b. slides - may be used to project a high-quality picture for group use; also, individuals using a hand viewer
- c. filmstrips - present a series of pictures in a fixed sequence
- d. overhead transparencies - can project written material, artwork or a photograph with black lines or in color; can be "created" during the instruction
- e. chalkboard - flexible and inexpensive way to present written material and simple illustrations

- f. charts and posters - for simple instruction, reminders, or to gain attention. Flip charts may be especially useful for on-the-job training

3. Moving Pictures

- a. commercially-produced 16mm films - a highly attractive and attention-compelling medium, may be used to show motion, illustrate actual events and dramatically re-enact stories and events
- b. single concept 8mm loop films - provide demonstrations of single skills, processes, events or ideas; are usually silent
- c. locally produced films - offer many of the advantages of the films described above with the additional capability of presenting instruction tailored directly to instructional needs
- d. instructional television - commercial broadcasts and professionally-produced tapes are similar to commercially-produced films; they can present more current events as well; videotape units can be used to record events or psychomotor behaviors and replay them immediately for instructional feedback

4. Audio Media

- a. people- instructors and students present information, hold discussions and provide feedback through the common act of speaking
- b. professionally-produced audio materials - present professional musicians, poets, historians and other national or international figures for individual or group use
- c. locally-produced audio materials - can present special instructions, guest presentations and student presentations; are flexible and inexpensive to use

5. Written Materials

- a. text and reference books - present detailed information which is easily accessible and can be studied at an individual's own pace.
- b. workbooks - allow for practice of procedures and other learning events where learners can respond in writing to presented problems and often receive direct feedback immediately
- c. periodicals - are especially useful for presenting current information
- d. teacher-produced handouts - useful for supplying specific instructions on instructional activities and supplemented information; are also used to evaluate learning

III. Media Quiz (assignment, 15 minutes)

Distribute Handout 6.1 and assign the participants fifteen minutes to complete it. Collect completed quizzes for subsequent review and return.

MEDIUM OF INSTRUCTION

A channel of communication through which instruction is presented to the learner

CATEGORIES OF MEDIA

1. Objects
2. Still Pictures
3. Moving Pictures
4. Audio Media
5. Written Materials

OBJECTS

The Real Things

People

Models

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Figure 6.3/Objects

STILL PICTURES

Flat Pictures

35mm Color Slides

Filmstrips

Overhead Transparencies

Chalkboard

Charts and Posters

MOVING PICTURES

Commercially Produced 16mm Films

Single Concept 8mm Films

Locally Produced Films

Instructional Television

AUDIO MEDIA

People

Professionally Produced Audio Materials

Locally Produced Audio Materials

WRITTEN MATERIALS

Text and Reference Books

Workbooks

Periodicals

Teacher Produced Handouts

UNIT SIX: SELECTING MEDIA FOR INSTRUCTION
LESSON 1 of 2: CATEGORIES OF MEDIA

Handout 6.1 Media Quiz

Directions: Name the five categories of media and list as many examples of each as you can remember.

1.

2.

3.

4.

5.

UNIT SIX: SELECTING MEDIA FOR INSTRUCTION
 LESSON 2 of 2: SELECTING EDUCATIONAL MEDIA FOR INSTRUCTION

Estimated time: 75 minutes

Entering
Competencies

Participants beginning this lesson must be able to list and describe the five categories presented in Lesson One and list several media which belong in each category.

Objective

*Behavior
Conditions*

Acceptable Performance

Upon completion of this lesson the participants will be able to select the media most appropriate for accomplishing a given objective using the Media Selection Table from this lesson. The chosen media must agree with the principles set forth in this lesson.

Justification

Trainers who must plan instruction should have a basis for making decisions as to which media may be most appropriate for specific instructional objectives. While there are no scientific procedures to apply to this task, this lesson provides guidelines for the factors to be considered.

Evaluation
Activities

Participants will complete a practice exercise in selecting media for a real or simulated instructional situation.

Resources

Participant Reference Manual
 Assignment 6.1 Selecting Educational Media
 for Instruction
 Media Selection Table
 Instructor's Answer Key

Instructional
Approach

The instruction for this lesson is presented in the self-instructional assignment in the Participant Reference Manual. The first task of the instructor is to assign this activity and remain available to answer any questions which may arise as the participants work through the assignment (30 minutes).

Secondly, lead a discussion (45 minutes) of the items and participants' responses. An answer key is provided. Since numerous valid answers are likely, ask participants to defend their choices.

In the course of the discussion make sure the following points are covered:

1. Media selection is a subjective decision and is not entirely scientific. The Media Selection Table is available to assist a trainer in developing instruction. It ensures that we consider different ways to present instruction instead of relying on the methods each of us is used to using.
2. The final decision on the media to be used includes consideration of what is available or what a trainer can create or has created.

MEDIA SELECTION TABLE

Categories of Media

Types of Behavior	OBJECTS	STILL PICTURES	MOVING PICTURES	AUDIO MEDIA	WRITTEN MATERIALS
COGNITIVE	Especially useful with demonstrations. Can be used to teach -recognition and discrimination -rules, principles or sequential steps.	Very useful for all levels of cognitive instruction. Can highlight stress concepts by displaying words, lists of steps, pictures and pictorial segments. Can provide visual cues.	Useful for showing content not otherwise easily brought into the training situation. Usually too costly for presenting still visuals and/or narrative audio.	May have their greatest use when in conjunction with printed matter or projected visuals. Useful if sounds of machines, alarms, etc. must be learned. Inexpensive.	Excellent media for all levels of cognitive instruction. Relatively inexpensive, printed materials allow for self-pacing. Can be used effectively with still pictures and audio materials.
PSYCHOMOTOR	Useful for teaching and trainee practice of performance in manipulating tools and equipment. Especially appropriate for on-the-job training. People can be used to demonstrate physical actions.	Little application. Can portray static positions of moving persons or objects.	Very useful. Can be used to: -model skills requiring motion -slow motion for close examination -provide visual feedback of student performance -demonstrate processes which take place over an extended time period.	Recorded audio materials generally useful in training only when demonstrating speech or hearing-related skills.	Limited application, since motion is difficult to represent. One important use is procedure guides or checklists for skills performance.
AFFECTIVE	Limited application. May be useful if the object is the focus of the desired attitude formation.	Limited application. Slides in combination with audio materials may influence attitude formation.	Excellent for influencing attitudes. Special effects and other visual techniques are especially useful for presenting affective material.	Limited application. Possibly useful for establishing moods or attitudes with background music, special sounds, or unique narration. May be used with slides to influence attitude formation.	Very little application for training materials.

UNIT SIX: SELECTING MEDIA FOR INSTRUCTION
 LESSON 2 of 2: SELECTING EDUCATIONAL MEDIA FOR INSTRUCTION

ASSIGNMENT 6.1: SELECTING EDUCATIONAL MEDIA FOR INSTRUCTION

Instructor's ANSWER KEY

1. My students must be able to check automatic flow recording equipment for correct operation.

Cognitive application. Appropriate media would include 1) the equipment itself (object), 2) a portrayal of the equipment to be checked (still pictures: slides, overhead transparencies, line drawings or prints included within a text) and 3) a check list or procedural outline (written materials) for checking the equipment.

2. My students must know fifteen conversion factors commonly used in day-to-day treatment operations.

Cognitive, knowledge. Appropriate media: 1) Still pictures - an overhead transparency listing the factors, 2) Written materials - a list of the factors within a text or in a handout.

3. My students must be courteous to other employees.

Affective. Possible media include a film or videotape in which employees display the desired behavior. A slide-tape might be effective if the attitude can be conveyed without motion. Also useful are live discussions (audio media).

4. My students need to understand the internal construction of a large piece of plant equipment.

Cognitive, comprehension. Appropriate media: 1) the actual equipment disassembled, 2) a model of the equipment, 3) slides, posters, or other series of pictures of the internal construction of the equipment. Moving pictures would only be necessary if the internal construction can only be understood in operation.

5. My students must know how to determine settleable solids, ml/liter.

Cognitive, application. Possible media: 1) the equipment used in the process, 2) a film of the procedure, 3) an illustrated written description of the procedure, 4) a filmstrip or slide series portrayal of the procedure.

ADVANCED INSTRUCTIONAL TECHNOLOGY

UNIT SEVEN

SELECTING INSTRUCTIONAL STRATEGIES - Unit Overview

Estimated time for unit - 7 hours

Overview

This unit extends participants' knowledge of the various types of instructional methods by incorporating information about strategies for implementing the methods. The unit presents concepts of and rules for practice, reinforcement, motivation, techniques for enhancing content, and techniques for teaching toward the type and level of behavior specified in an objective.

Entering Competencies

Before beginning this unit, participants should be able to plan a lesson using the Lesson Planning Form and Instructional Package Worksheet (IPW).

Summary of Objectives

By the end of this unit, participants will be able to:

- define each instructional strategy component
- list and give examples of the application of the rules for incorporating practice within instruction
- identify appropriate uses for each type of reinforcement
- identify effective techniques for motivating trainees
- describe techniques for clarifying, emphasizing, and illustrating important instructional content and provide an example of each.
- select instructional strategy components that are appropriate for each type and level of behavior specified in an objective.

Evaluation Activities

Comprehension and application exercises and self-checks accompanying each assignment will serve as the evaluation activity for this unit.

References

Briggs, L. J. (ed). Instructional design: principles and applications. Englewood Cliffs, NJ: Educational Technology Publications, 1977.

Gagne, R. M. Essentials of learning for instruction (expanded edition). Hinsdale, IL: The Dryden Press, 1975.

Gagne, R. M. & Briggs, L. J. Principles of instructional design. New York: Holt, Rinehart and Winston, Inc., 1974.

Gerlach, V. S. & Ely, D. P. Teaching and media: a systematic approach. Englewood Cliffs, NJ: Prentice-Hall, Inc., 1971.

Summary of Unit Activities

Lesson Title	Instructional	Time	Support Materials
1) Introduction	Lecture	45 min.	Content Outline Figure 7.1-7.9 Handout 7.1-7.2
2) Incorporating Opportunities for Practice	Assignment	60 min.	Assignment 7.1
3) Using Feedback and Other Reinforcements	Assignment	45 min.	Assignment 7.2
4) Motivation	Assignment	60 min.	Assignment 7.3
5) Strategies for Enhancing Content	Assignment	75 min.	Assignment 7.4
6) Teaching Toward the Objective	Assignment	135 min.	Assignment 7.5

SPECIAL PLANNING NOTES:

It is recommended that you present Lesson 1 during the workshop as an introduction to the provided materials.

(Continued on next page)

Lessons 2 through 6 are primarily self-study assignments printed in the participant reference manual. These assignments include self-checks and answer keys. Any or all of these lessons can be completed outside workshop hours as home work, or even after the workshop is completed as further study for the participants.

Lessons 2 (Practice), 3 (Feedback) and 5 (Enhancing Content) are especially suitable for independent study after the workshop.

Lessons 4 and 6 could be similarly treated but there are particular advantages to including them in the workshop. Lesson 4, Motivation, would be enhanced by a follow-up discussion among the participant trainers about techniques each has found effective in motivating trainees. Lesson 6, Teaching Toward the Objective, is divided according to the 3 types of behavior and four levels of cognition. Although these divisions are used in other units of this workshop (e.g. Analysis, Methods, Media), the concepts may be fairly new to participants. By working through lesson 6 during the workshop, the participants could reinforce and broaden their understanding of these behaviors, thereby strengthening their ability to develop and teach toward this key element of instructional objectives.

UNIT SEVEN: SELECTING INSTRUCTIONAL STRATEGIES
LESSON 1 of 6: INTRODUCTION

Estimated time: 45 minutes

Entering
Competencies

Before beginning this lesson, participants should be able to plan a lesson, using the Lesson Planning Form and the Instructional Package Worksheet (IPW).

Objective

Behavior

Conditions

Acceptable Performance

By the conclusion of this lesson, participants will be able to define each of the five major instructional strategy components. Given the name of a component, participants will provide the definition in their own words. The definitions must identify both the particular characteristics of each component and indicate that the inclusion of all five components results in an instructional strategy.

Justification

Participants have already learned to follow general prescriptions for using certain combinations of media and instructional methods to achieve different types and levels of objectives. Additionally, more specific prescriptions exist to help participants select and sequence individual activities and events that are incorporated within the more general methods and media. This unit is designed to extend participants' knowledge and skills in planning and implementing instruction by utilizing specific instructional strategies to achieve desired outcomes.

Evaluation
Activities

Oral responses to instructor-generated questions will serve as the evaluation activity for this lesson.

Resources

Content Outline

- Figure 7.1 Structure of Unit Seven
- 7.2 Learning Is...
 - 7.3 Instruction Is...
 - 7.4 Learning vs. Instruction
 - 7.5 Instructional Activities
 - 7.6 The IP Process-Selection
 - 7.7 Definition of Strategy
 - 7.8 Strategy Components
 - 7.9 Instructional Strategies

- Handout 7.1 Learning vs. Instruction
- 7.2 Strategy Components

Instructional Approach

The activity for this lesson consists of a lecture on instructional activities and strategies for designing and implementing effective instruction. This lecture provides an overview and synthesizing structure for the succeeding lessons. Thus, you should incorporate participant discussion of issues and concepts within the general framework of the lecture. A content outline is provided; accompanying figures and handouts are keyed in the outline.

1. Introduce the purpose and objectives of the unit. Inform participants that this unit will help them deal more specifically and explicitly with the individual events of instruction.
2. Present the structure of the unit. Emphasize that this lesson serves as overview and synthesizing structure for the unit and that succeeding lessons will be integrated within this structure. Use Figure 7.1.
3. Differentiate between learning activities and instructional activities. Present the three general types of instructional activities; involve participants in identifying examples of each type. Use Figure 7.2-7.6. Distribute Handout 7.1.
4. Define "strategy"; distinguish between instructional methods and instructional strategies. Identify and briefly describe the five strategy components. Use Figure 7.7-7.8; distribute Handout 7.2.
5. Describe the contents of the unit in terms of the instructional strategy components. Use Figure 7.9.
6. Discuss with participants the concepts and issues presented within the lesson. Involve them in relating this unit to the systematic approach to instruction developed in Unit One.

UNIT SEVEN: SELECTING INSTRUCTIONAL STRATEGIES

LESSON 1 of 6: INTRODUCTION

Content Outline

Estimated time: 30 minutes

I. Purpose and Objectives of Unit Seven (lecture, 5 minutes)

Using the following outline, review very briefly the process of selecting instructional methods discussed in Unit Five. Remind participants that the Instructional Methods Check List involved applying a set of rules for selecting methods. Inform them they are now ready to learn more precise and specific rules for identifying individual events and activities to incorporate within the larger instructional methods. State the purposes and objectives of the unit. Then generally describe the structure of the unit; use Figure 7.1.

A. Purpose

1. to increase skill in designing instruction by presenting prescriptions for including specific kinds of events and activities within the instruction.
2. to increase understanding of the reasons for utilizing certain instructional and learning activities to achieve desired ends.

B. Unit Objectives

By the conclusion of this unit, you will be able to

1. describe the role of instructional strategies in planning and implementing instruction.
2. utilize general strategies to plan for
 - a. incorporating practice opportunities within instruction
 - b. using feedback and other reinforcements during instruction
 - c. describe techniques for motivating trainees
 - d. identify techniques for clarifying, emphasizing, and illustrating important content.
3. employ specific strategies to select instructional and learning activities that are most appropriate for each type and level of instructional objective.

C. Structure of the Unit

Figure
7.1

1. overview - the role of instructional strategies - Lesson One
2. general instructional strategies - Lessons Two through Five
3. specific instructional strategies for specific objectives - Lesson Six.

II. Learning and Instruction (lecture, 10 minutes)

In the following presentation, you should differentiate between learning activities and instructional activities, emphasizing differences between learning and instruction as the basis for your analysis. Stress the importance of selecting instructional events (methods, learning activities, and media) that make learning both effective and efficient.

A. Learning

Figure
7.2

1. definition

Learning refers to what happens inside the individual; it involves a more or less permanent change in the ability to do something that the learner could not previously do. It represents an increased ability of some kind.

- a. it is internal - it occurs within the learner and cannot be directly observed; instead, it is inferred from one learner's behavior.
- b. it is an increased ability to do something the learner could not previously do; it is demonstrated by some performance, some behavior, of the learner.

Examples: Billy can tie his own shoelaces.

Marion is able to convert fractions into percentages.

This department is capable of solving the company's communication problems.

2. learning activities: definition

Present the three types of instructional activities; stress that the first type is of major concern during the planning and design stages of preparing instruction. Ask participants to give examples of each of the three types of activities; then, for each instructional activity suggested, ask participants to state a corresponding learning activity. Offer guidance as necessary, but try to avoid providing examples. Distribute Handout 7.1.

Make certain that participants can differentiate between learning and instructional activities and among the three types of instructional activities before continuing.

Learning activities are things learners do to help them learn. There are two general kinds of learning activities: receptive and participative activities.

- a. receptive activities: the learner is receiving information.

Examples: listening to a lecture
watching a film

- b. participative activities: the learner is using knowledge skills.

Examples: solving problems
practicing a procedure
discussing issues and concerns

Both kinds of learning activities are important; they are used for different purposes but learners must have opportunities both to receive and to use information and skills.

B. Instruction

Figure
7.3
and
7.4
Handout
7.1

1. definition

Instruction refers to what happens outside the individual learner; it is the process of arranging conditions that lead to learning. Instruction includes everything a teacher or trainer does to make it possible for students to learn.

- a. it is external - it occurs outside the learner and can be observed, manipulated, and changed; it may involve anything in the environment around the learner that can be used to help him/her learn.
- b. it is an arranging of conditions that promote learning; the conditions may include materials, learning activities, resources, facilities, and methods. Literally, anything one does in order to help a student learn can be called instruction.

Examples: Mr. Watkins lectured on defining a problem. The instructor showed a film on the importance of energy conservation.

2. instructional activities: definition

instructional activities are things an instructor or trainer does to help students learn.

Figure
7.5

a. three types of instructional activities

- i. selection of instructional methods and media and of learning activities - involves decisions about what should be learned, how and in what order, what materials will be provided, and how learning will be evaluated.
- ii. motivation of learners - involves decisions about how to involve learners in the activities, how to keep them working effectively, and how to inform them about their progress.
- iii. management of instruction - involves decisions about how to control the logistics of instruction, including getting materials to learners, performing housekeeping tasks, and working within the limitations of time, space, and resources.

Figure
7.6

- b. decisions about all three types of activities are made during the development/delivery stages. The result is an Instructional Package Worksheet (IPW) -- a management plan for organizing and carrying out the events and activities of instruction. Thus the strategy for managing instruction is to prepare and use an IPW for each lesson.
- c. selection and motivation strategies are the subject of the remaining lessons of this unit.

III. Instructional Strategies (lecture, 15 minutes)

Define "strategy"; differentiate between methods and strategies. Use Figure 7.7.

Describe the contents of this unit in terms of kinds of instructional strategies. Involve participants in relating the notion of instructional strategies to the systematic approach to instruction described in Unit One. Use Figure 7.8.

A. Definition of Instructional Strategy

Figure 7.7 A strategy is a prescription for accomplishing a particular goal or objective. It is a specific statement of what means should be used to achieve a specific end.

Instructional strategies are very precise prescriptions for designing and implementing instruction. Each strategy is a set of rules for selecting instructional and learning activities that will help learners master specific kinds of objectives. Instructional strategies have been developed as a result of research on teaching and learning; they are stated as rules because they are tested means for accomplishing desired ends.

B. Strategy Components

Figure 7.8 Handout 7.2 Each instructional strategy has several parts of components.

1. instructional method component - identifies means for communicating content to learners
 - a. lecture
 - b. guided discussion
 - c. demonstration
 - d. adaptive instruction
2. practice component - identifies means of providing learners with opportunities to practice what they are learning.
3. reinforcement component - identifies ways of providing learners with information about their degree of success in learning.
4. motivation component - identifies effective ways for motivating learners.
5. content enhancement component - identifies techniques for clarifying, emphasizing, and illustrating the content to be taught.

- C. General strategy components prescribe the most effective means for

Figure
7.9

1. incorporating practice within instruction - Lesson Two
2. using reinforcement - Lesson Three
3. motivating learners - Lesson Four
4. selecting appropriate techniques for clarifying, emphasizing, and illustrating content - Lesson Five

- D. Specific strategies prescribe the most effective means for teaching specific objectives according to the type and level of behavior specified in the objective. Lesson Six incorporates strategies presented in earlier lessons with strategies designed to facilitate learning particular types and levels of behavior.

Discuss the concepts and issues raised during the lecture. Make certain that participants are comfortable with the terms and concepts before continuing with Lesson Two.

STRUCTURE OF UNIT TWO

Introduction: Overview and Synthesis

Lesson 1

General strategies for Designing and
Implementing Instruction

Lessons 2-5

Specific strategies for Teaching Each
Type and Level of Behavior

Lesson 6

LEARNING IS . . .

1. An internal event
2. Change in ability
3. More or less permanent
4. Inferred from behavior

INSTRUCTION IS . . .

1. An external event
2. Arranging conditions

methods

activities

materials

resources

facilities

LEARNING

INTERNAL

DEVELOPING ABILITIES

DOING (activities)

INSTRUCTION

EXTERNAL

ARRANGING CONDITIONS

ORGANIZING (planning,
designing, managing,
evaluating)

INSTRUCTIONAL ACTIVITIES

1. Selecting methods, media, learning activities
2. Motivating learners
3. Managing instruction

THE INSTRUCTIONAL DEVELOPMENT PROCESS

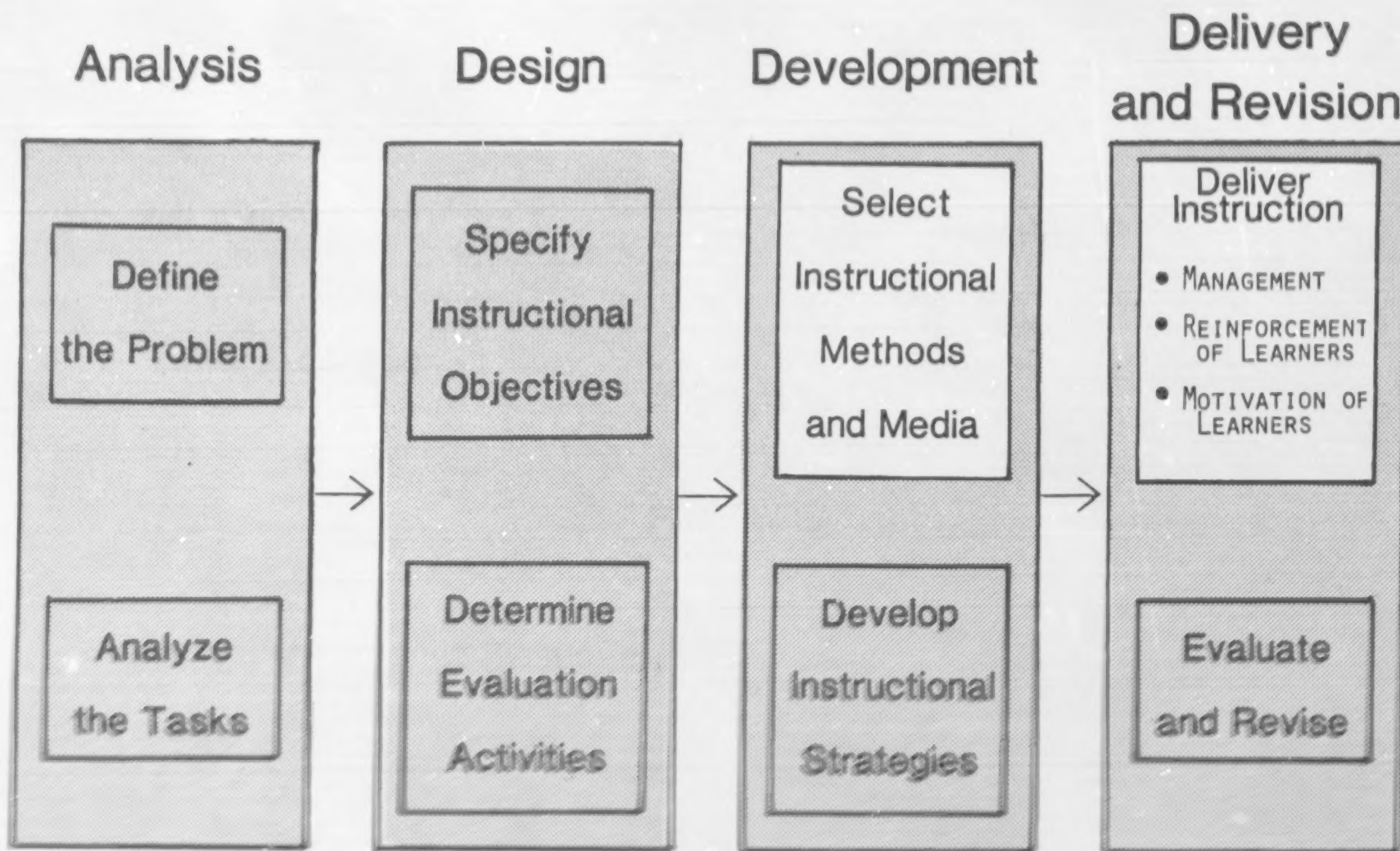


Figure 7.6/The Instructional Development Process - Section on Management, Motivation

INSTRUCTIONAL STRATEGY

- A rule for selecting instructional activities to help learners master objectives
- A statement relating Means to Ends

EXAMPLE:

Objective – End:

to help trainees learn facts

Prescribed activities – Means:

present facts repeatedly

provide frequent practice in
recognizing and recalling

150

INSTRUCTIONAL STRATEGY COMPONENTS

An instructional strategy consists of:

1. A method component
 - a means for communicating content to learners
2. A practice component
 - a means of providing learners with opportunities for practice
3. A reinforcement component
 - ways of providing learners with information about progress
4. A motivation component
 - ways of motivating learners
5. A content enhancement component – techniques for clarifying , emphasizing, and illustrating content

INSTRUCTIONAL STRATEGIES

General strategies for:

Incorporating Practice

Lesson 2

Using Reinforcement

Lesson 3

Motivating Learners

Lesson 4

Enhancing Content

Lesson 5

Specific strategies for:

Specific types of Objectives

Lesson 6

UNIT SEVEN: LESSON 1 of 6
Handout 7.1: LEARNING VS. INSTRUCTION

LEARNING VS. INSTRUCTION

direction

an internal event
inferred from
behavior

an external event

purpose

developing abilities
which are more or
less permanent

arranging conditions that
facilitate learning
(methods, activities,
materials, resources,
facilities)

focus

doing (knowing,
understanding,
applying, solving,
feeling, moving)

organizing (planning,
designing, managing,
evaluating)

INSTRUCTIONAL ACTIVITIES

Activity

Result

1. select/design methods, learning activities, materials, media, evaluation activities
2. plan to incorporate rewards and recognition
3. plan to manage the instructional process (schedule time and space, arrange for use of media, organize materials)

Lesson Plan

Instructional Package
Worksheet

UNIT SEVEN: LESSON 1 of 6
Handout 7.2: INSTRUCTIONAL STRATEGY COMPONENTS

INSTRUCTIONAL STRATEGY COMPONENTS

An instructional strategy consists of

1. a method component - a means for communicating content to learners
2. a practice component - a means of providing learners with opportunities for practice
3. a reinforcement component - ways of providing learners with information about progress
4. a motivation component - ways of motivating learners
5. a content enhancement component - techniques for clarifying, emphasizing, and illustrating content

UNIT SEVEN: SELECTING INSTRUCTIONAL STRATEGIES
LESSON 2 of 6: INCORPORATING OPPORTUNITIES FOR PRACTICE

Estimated time: 60 minutes

Entering
Competencies

Before beginning this lesson, participants should be able to use a Task Detailing Sheet and a Lesson Planning Form and to distinguish the five major components of instructional strategies.

Objective

Behavior

Conditions

Acceptable Performance

By the conclusion of this lesson, participants will be able to give an example of the application of the rules for incorporating practice within instruction. Using the simulated Task Detailing Sheet and Lesson Planning Form provided as resources, participants will specify practice activities necessary for a lesson on performing a single task. The practice activities specified must conform to all appropriate rules contained within the lesson.

Justification

Learners must be able to practice the skills and knowledge they are learning. Practice provides learners with information as to how well they understand and are able to perform required tasks. An understanding of the rules governing effective practice activities will help participants to design more effective instruction.

Evaluation
Activities

Completion of the application exercise at the conclusion of the assignment will serve as the evaluation activity for this lesson.

Resources

Participant Reference Manual
Assignment 7.1

Instructional
Approach

The activity for this lesson consists of an assignment designed to teach participants how and when to incorporate practice within instruction. Readings, self-checks, and exercises are included within the assignment. A key to suggested answers accompanies the materials.

1. Briefly introduce the lesson objective and purpose. Refer participants to the assignment in their manuals. Allow 50 minutes for completion of the assignment. Remain available to answer any questions.
2. After the assignment has been completed, hold a discussion on problems and concerns involved in implementing the rules. Use the application exercise as the focus of the discussion.

UNIT SEVEN: SELECTING INSTRUCTIONAL STRATEGIES
 LESSON 3 of 6: USING FEEDBACK AND OTHER REINFORCEMENTS

Estimated time: 45 minutes

Entering
Competencies

Before beginning this lesson, participants should be able to distinguish the five major components of instructional strategies.

Objective

*Behavior
Conditions*

Acceptable Performance

By the conclusion of this lesson, participants will be able to identify appropriate uses for each type of reinforcement. Given situations which warrant different reinforcements, participants will identify the type of reinforcement warranted and will identify improper reinforcement procedures. The responses will be evaluated against the answers suggested in the answer key.

Justification

Praise, encouragement, and knowledge of the results of one's endeavors are important components of learning. Knowing when and how to provide trainees with reinforcement is an important skill for trainers.

Evaluation
Activities

Self-checks within the instructional materials will serve as the evaluation activity for this lesson.

Resources

Participant Reference Manual
 Assignment 7.2

Instructional
Approach

The activity for this lesson consists of an individual assignment designed to teach participants how and when to use different types of reinforcement during instruction. Self-checks are provided within the materials to evaluate participant understanding of concepts. Answer keys are provided at the end of the materials.

1. Briefly introduce the lesson objective and purpose. Refer participants to their manuals for the assignment. Remind them that they have 35 minutes to complete the assignment. Remain available to assist participants as needed.
2. After all participants have completed the assignment, hold a brief evaluative discussion to identify problems and concerns with the concepts of reinforcement and their application during training.

UNIT SEVEN: SELECTING INSTRUCTIONAL STRATEGIES
LESSON 4 of 6: MOTIVATION

Estimated time: 60 minutes

Entering
Competencies

Before beginning this lesson, participants should be able to distinguish the five major components of instructional strategies.

Objective

Behavior
Conditions

Acceptable Performance

By the conclusion of this lesson, participants will be able to identify effective techniques for motivating trainees in both classroom and on-the-job situations. Given a statement of a motivational problem, participants will apply the guidelines to create effective motivational strategies. Participants' responses should be similar to the guidelines.

Justification

Motivation to succeed plays an important part in the success of learners. Trainers must be aware of the various goals, needs, and drives that motivate trainees and of the techniques for focusing instruction in terms of those goals, needs, and drives.

Evaluation
Activities

Completion of the application exercise during the concluding discussion will serve as the evaluation activity.

Resources

Participant Reference Manual
Assignment 7.3

Instructional
Approach

The activity for this lesson consists of an assignment designed to teach participants' concepts in motivation and guidelines for using motivation effectively during training. Readings, self-checks, and exercises are included in the assignment. A key to suggested answers accompanies the materials.

1. Briefly introduce the lesson objective and purpose. Refer participants to the assignment in their manuals. Inform them that they have forty minutes in which to complete the assignment. Remain available to provide assistance as necessary.

2. At the end of forty minutes, reassemble the class and conduct a discussion on the types of goals, needs, and drives that motivate trainees and on ways of making instruction more relevant to trainees in terms of their needs, goals, and drives. Use the Application Exercise located at the end of the assignment materials. Also, use this time to deal with any problems arising from participants' understanding of the contents of the assignment.

UNIT SEVEN: SELECTING INSTRUCTIONAL STRATEGIES
LESSON 5 of 6: STRATEGIES FOR ENHANCING CONTENT

Estimated time: 75 minutes

Entering
Competencies

Before beginning this lesson, participants should be able to distinguish the five major components of instructional strategies.

Objective

Behavior

Conditions

Acceptable Performance

By the conclusion of this lesson, participants will be able to identify instructional situations which warrant the use of each type of content enhancement strategy. Using their own training situations as resources, participants will identify a circumstance which warrants the use of each type of content enhancer and will describe how they would meet each need. The responses must conform to the guidelines for enhancing content contained within the lesson materials.

Justification

There are many ways of presenting the content of a lesson, but the most effective ways generally involve the use of various techniques for emphasizing, clarifying, illustrating, and highlighting content so that important information is more readily accessible to the learner. This lesson introduces general guidelines for more effective presentation of the content of instruction.

Evaluation
Activities

Self-checks within the instructional materials will serve as the evaluation activity for this lesson.

Resources

Participant Reference Manual
Assignment 7.4

Instructional
Approach

The activity for this lesson consists of an individual assignment designed to teach participants how to use various techniques for enhancing content. An application exercise concludes the assignment.

1. Briefly introduce the lesson objective and purpose. Inform participants that the lesson concludes with an application exercise. Remind them that they have 60 minutes in which to complete the assignment materials.

2. Refer participants to the assignment in their manuals. Remain available to assist participants as necessary.
3. At the end of an hour, conduct a discussion about the various strategies that participants have been studying; ask them to display the materials they have developed as part of the strategies that they may suggest.

UNIT SEVEN: SELECTING INSTRUCTIONAL STRATEGIES
LESSON 6 of 6: TEACHING TOWARD THE OBJECTIVE

Estimated time: 2 hours 15 minutes

Entering
Competencies

Before beginning this lesson, participants should be able to distinguish the three types of behavior and four levels of cognitive behavior. (Unit 2, lesson 2).

Objective

Behavior

By the conclusion of this lesson, participants will be able to select instructional strategy components that are appropriate for each type and level of behavior specified in an objective.

Conditions

Given an instructional objective appropriate for a training situation, participants will classify the behavior of each objective and identify the strategies most appropriate for teaching that objective.

Acceptable Performance

The instructor will judge the response to be acceptable if it agrees generally with the set of strategies delineated in the readings for the particular type and level of behavior in the objective.

Justification

Selection of appropriate instructional strategies depends on the type and level of behavior specified in the instructional objective. This lesson teaches participants to select strategies that are appropriate for a particular type and level of behavior.

Evaluation
Activities

A summative exercise serves as the evaluation activity for this lesson.

Resources

Handout 7.3: Exercise Description Sheet
Participant Reference Manual
Assignment 7.5: Teaching Toward the Objective

Instructional
Approach

This lesson represents the synthesis of the previous five lessons in Unit Seven. The activities consist of a series of readings and self-checks, (one set for each type and level of behavior) and a summative exercise which tests comprehension of the entire contents of the unit. The readings and self-checks are contained in Assignment 7.5; the exercise, contained in a handout, may be assigned either during class time or as a take-home activity. In either case, a debriefing on the exercise should be held before the next unit is begun.

1. State the objective of this unit. Refer participants to Assignment 7.5 in the manuals. Remind them that they have 90 minutes in which to complete the readings and self-checks. Remain available to provide assistance as needed.
2. At the end of 90 minutes, conduct the evaluation exercise. Distribute the exercise description sheet and review the directions with participants. Divide the class so that there are six groups. Assign each group, or have them volunteer, to design the instruction for one of the objectives* stated in the exercise description. Inform the groups that they are to
 - a. identify the type and level of behavior specified in the objective, and
 - b. outline a set of specific strategies appropriate for teaching that objective.

Provide assistance as needed in the form of cues and prompts, but require each group to design its own lesson.

3. At the end of 30 minutes, collect the product from each group. Conduct a debriefing discussion on problems and concerns associated with developing instruction.
4. Evaluate the products for appropriateness of strategies and for consistency among strategies. Then make enough copies of each product so that each participant has a copy of each of the six products for reference. Distribute the copies as soon as possible.

*If the objectives specified on the exercise are not appropriate for the particular group of participants, construct more relevant objectives and substitute these. There is not enough time allowed in the exercise for teams to construct their own objectives.

UNIT SEVEN: LESSON 6 of 6
Handout 7.3: EXERCISE DESCRIPTION

EXERCISE DESCRIPTION

You have been asked to provide training as a solution to a performance problem. You have already specified the instructional objective (see list below) and determined the evaluation activities. You must now develop the instruction by selecting appropriate methods, media, and strategies. Your team's task is to plan the lesson, indicating the sequence of activities by which you will teach the lesson. You should specify methods, media, and specific strategies for each step or activity in the lesson. Your final product should be a detailed "Instructional Approach" section, similar in kind to that found in the Instructional Package Worksheet (but not necessarily identical to it), in which you delineate all instructional and learning activities and necessary instructional resources. The product should be sufficiently detailed that a colleague can use it to teach the lesson.

Your product will be the result of team effort. You may use your manuals and notes during the exercise. You have approximately 30 minutes in which to complete the task. Your instructor will then collect the products and evaluate them. He will distribute to each participant a copy of each of the six products. You should keep them as references for future development efforts.

The Objectives:

1. Trainees will diagram and label the parts of one applicator acceptable for pest control for outdoor nursery crops. The task must be performed without the aid of notes or texts. The diagram must contain all major parts of the applicator, as identified in the instructional materials; the parts must be labelled with 90% accuracy.
2. Given the chemical formulae for several different types of solutions, trainees will classify each solution as either acid, base, or neutral on the basis of the chemical formula. No notes or texts may be used. At least 9 of 10 solutions must be correctly classified.
3. Weed Control Farm Advisors will calculate the standard deviation of field sample particulate densities, given the density measures of the samples collected. The calculations may be performed either by hand or on hand calculators; no texts, notes, or other aids may be used. The standard deviations must be accurate to three decimal places.
4. Department supervisors will devise a method for providing in-service training to employees who demonstrate poor performance. The method must be amenable to the needs and circumstances of the particular department and may not require lengthy employee absences from their jobs.

5. Trainees must develop an attitude of concern for the safe utilization of hazardous substances in their work. This concern should be manifested orally and in safe work practices.
6. Trainees will operate a fork-lift to lift, transport, and deliver cases of extremely fragile testing equipment. The operation must occur without any assistance from other personnel and without causing damage to either the testing equipment, their containers, or the fork-lift.

This chart will help you to plan your lesson. Fill in each column for each activity included in the lesson.

Objective: _____

Type and Level of Behavior: _____

Step/Activity	Method(s)	Media	Strategies
1.			
2.			
3.			
4.			
5.			
6.			

ADVANCED INSTRUCTIONAL TECHNOLOGY

UNIT EIGHT

USING AND DEVELOPING MEDIA - Unit Overview

Estimated time for unit - 4 hours

Overview

This unit is concerned with the use of media in the training classroom. General principles are presented for using any instructional media. One especially versatile medium, the overhead transparency, is treated in more detail. Both utilization and production considerations are presented in a participant assignment.

Entering Competencies

Participants beginning this unit should be familiar with a systematic approach to instruction, be able to select media for use in training, and should have had experience speaking before a group.

Summary of Objectives

By the conclusion of this unit the participants will be able to:

- list and explain the steps for planning and implementing the use of media in instruction
- describe at least four effectiveness considerations for each step
- apply the five steps to any medium selected to meet an instructional need
- describe four advantages of transparencies as a medium of instruction
- describe four techniques for using the overhead projector effectively
- describe three factors to be considered in creating effective transparencies.

Evaluation Activities

Participants will complete self-tests at the conclusion of each lesson.

References

Kemp, J. E. Planning and producing audiovisual materials. New York: Crowell, 1975.

Summary of Unit Activities

Lesson Title	Instructional Methods	Time	Support Materials
1) Utilization of Media in the Training Session	Assignments Guided discussion	120 min.	Figure 8.1-8.7 Assignment 8.1
2) Production and Use of Transparencies on the Overhead Projector	Assignment Guided discussion	120 min.	Figure 8.8-8.9 Transparency Materials

UNIT EIGHT: USING AND DEVELOPING MEDIA
LESSON 1 of 2: UTILIZATION OF MEDIA IN THE TRAINING SESSION

Estimated time: 120 minutes

Entering
Competencies

Participants beginning this lesson must be able to select media for specific instructional needs.

Objective

*Behavior
Conditions
Acceptable Performance*

By the end of this lesson the participants will be able to list and explain each of the five steps for planning and implementing the use of media in instruction from memory. All five steps will be given and at least four effectiveness considerations will be given for each.

Justification

The effective use of media selected for instruction requires careful planning and consideration of a number of contingencies. Each medium also has slightly different utilization characteristics. This lesson provides useful information for planning to use media in a presentation.

Evaluation
Activities

Participants will take a self-test upon completion of a self-instructional exercise.

Resources

- Figure 8.1 Effective Utilization of Media
- 8.2 Selection
- 8.3 Teacher Preparation
- 8.4 Student Preparation
- 8.5 Presentation of Material
- 8.6 Follow-up
- 8.7 Evaluation

Participant Reference Manual

Assignment 8.1 Effective Utilization of Media in Instruction

Instructional
Approach

This lesson should begin by directing the participants to complete Assignment 8.1 Effective Utilization of Media in Instruction which is located in the Participant Reference Manual. This assignment describes in detail each of five steps to effective media use. The assignment also includes a twenty-item objective self-test. Allow no more than forty-five minutes to complete the assignment.

Figures 8-1 through 8-7 When the participants have completed the assignment, lead a discussion of the steps using the figures provided. In the discussion elicit from the group, from training programs they have taken or given, examples of the results of following the suggestions given in this lesson as well as the consequences of ignoring them. The purpose of the discussion is to reinforce the assignment and to clear up any confusion which may exist. Continue the discussion until you feel these goals have been met. (Maximum: 30 minutes.)

After the discussion, have each participant select a concept or skill to be taught and a medium, or media, to be used in teaching that concept or skill. Allow the participants forty-five minutes to plan for the use of the material by working through each of the steps of effective utilization. These written plans of no more than three pages each, should be handed in for comments and corrections by you. You will have time to go over the plans and return them while the participants complete the assignment in Lesson Two.

Effective Utilization of Media

- SELECTION
- TEACHER PREPARATION
- STUDENT PREPARATION
- PRESENTATION OF MATERIAL
- FOLLOW-UP AND EVALUATION



Figure 8.1/Effective Utilization of Media.

SELECTION

Objectives(s) of lesson

Accuracy of information

Ability level of students

Background and experience of students

Interest of students

Needs of students

Characteristics of individual media

TEACHER PREPARATION

Preview material for content and difficulty level

Determine which instructional objectives the material addresses

Gather further information and supplementary materials

Prepare introduction, presentation, and follow-up activities

Make necessary physical arrangements

STUDENT PREPARATION

Develop an understanding of the objectives

Develop prerequisite skills and/or knowledge

Explain new or difficult vocabulary terms

Assign specific things to look or listen for

Use other materials develop basic ideas

PRESENTATION OF MATERIAL

Keep students actively involved

Provide for participatory activities

Stop film, filmstrip, video tape for discussion or clarification

Use other media with material being presented

Provide for feedback and active responses

Show a portion of a film or video tape over again or have students listen to a portion of an audio tape a second time

FOLLOW-UP

Discuss concepts of ideas presented

Relate concepts and ideas to objectives of the lesson

**Provide opportunities for students to use the information
or practice the skills gained from the material**

**If questions were raised in the student preparation,
identify answers to these questions**

EVALUATION

Determine if objectives of lesson were accomplished

- a. If objectives were not accomplished at a satisfactory level,
look at activities in other steps to see where the lesson
could have been improved
- b. As students participate in the follow-up activities, they should
indicate their accomplishment of objectives

UNIT EIGHT: USING AND DEVELOPING MEDIA
 LESSON 2 of 2: PRODUCTION AND USE OF TRANSPARENCIES ON THE OVERHEAD PROJECTOR

Estimated time: 120 minutes

Entering Competencies

Participants must be able to select media for specific instructional objectives and be able to use them in training sessions.

Objective

*Behavior
Conditions*

Acceptable Performance

Upon the completion of this lesson the participant will be able to produce simple overhead transparencies and plan the production of sequenced presentations. The participants may use any of the materials provided for this lesson. The products prepared should conform to the standards set in the self-instructional assignment as determined by the participant.

Justification

Many simple materials can be prepared by instructors who must develop and present training programs. This lesson presents some options and techniques for locally produced materials.

Evaluation Activities

Participants will evaluate their own products.

Resources

Figure 8.8 Advantages of Transparencies

Figure 8.9 Advantages of Overhead Projection

Participant Reference Manual

Assignment 8.2 Production and use of Transparencies on the Overhead Projector

Additional Equipment

Required: Overhead projector and screen
 Clear acetate sheets
 Felt tip pens or nylon markers
 Grease or wax pencils (china markers)
 Transfer letters
 Transparent tape

Suggested: Color, adhesive-backed acetate sheets
 X-acto knife or razor blades
 Mounting frames

Instructional
Approach

Present a brief lecture on the overhead projector using Figure 8.8 and 8.9. Then assign the reading and exercise in the Participant Reference Manual. Part of the assignment requires the participants to produce transparencies. You should be available to facilitate their work and examine the transparencies as the participants create them.

NOTE: This lesson has been allotted two hours of classroom time. If materials to produce transparencies are not available, you may wish to substitute an alternate activity or shorten the lesson.

ADVANTAGES OF TRANSPARENCIES

- Can be locally produced to meet specific needs
- Preserved for future use
- Inexpensively made in color
- Many presentation techniques can be used

ADVANTAGES OF OVERHEAD PROJECTION

- **Used in front of group**
- **Bright image in normally lighted room**
- **Ease of operation**
- **Large aperture permits easy use**
- **Horizontal stage provides flexibility**

ADVANCED INSTRUCTIONAL TECHNOLOGY

UNIT NINE

ADAPTIVE INSTRUCTION - Unit Overview

Estimated time for unit - 2 hours

Overview

Adaptive instruction methods permit the modification of instructional materials and circumstances to meet the needs of individual trainees or small groups of trainees. Methods such as tutorials, individual and small-group assignments, and individualized learning packages permit the trainer to adapt materials by varying such instructional components as time-on-task, number of practice sessions, and level of sophistication or complexity of content. This unit introduces three basic methods for adapting instruction.

Entering Competencies

Before beginning this unit, participants should be able to name and state the characteristics of each of the four major instructional methods, and identify appropriate strategies for teaching each type and level of behavior specified in instructional objectives.

Summary of Objectives

By the conclusion of this unit the participants will be able to:

- name three types of individual assignments and give the characteristics of each
- state at least four concerns to be addressed when preparing assignments
- define "Individualized Learning Package" (ILP) and list the selection criteria for choosing a prepared ILP for use during training
- define "tutorial" and state the criteria for conducting a tutorial.

Evaluation Activities

Guided discussions and group assignments will serve to evaluate attainment of lesson objectives.

References

- Dick, W. & Carey, L. The systematic design of instruction. Glenview, IL: Scott, Foresman and Company, 1978.
- Gagne, R. M. & Briggs, L. J. Principles of Instructional design. New York: Holt, Rinehart and Winston, 1974.

Briggs, L. J. (Ed.) Instructional design: principles and applications. Englewood Cliffs, NJ: Educational Technology Publications, 1977.

Summary of Unit Activities

Lesson Title	Instructional Methods	Time	Support Materials
1) Introduction	Lecture	30 min.	Content Outline Figure 9.1-9.3 Handout 9.1
2) Individual Assignments	Lecture Assignment	30 min.	Content Outline Figure 9.4 Handout 9.2 Participant Reference Manual
3) Individualized Learning Packages	Lecture Assignment	45 min.	Content Outline Figure 9.5-9.6 Handout 9.3-9.6
4) Tutorials	Lecture Assignment	15 min.	Content Outline Figure 9.7 Handout 9.7

UNIT NINE: ADAPTIVE INSTRUCTION
LESSON 1 of 4: INTRODUCTION

Estimated time: 30 minutes

Entering
Competencies

Before beginning this lesson, participants should be able to name and state the characteristics of each of the four major instructional methods; lecture, guided discussion, demonstration, and adaptive instruction.

Objective

Behavior

Conditions

Acceptable Performance

By the conclusion of this lesson, participants will be able to distinguish among the three types of adaptive instruction and use the selection criteria to choose the most appropriate type(s) for a given training situation. Given a description of a training situation, participants will select and justify a particular type or types of adaptive instruction to suit the situation. Participants must be able to disqualify some types and to provide a rationale for the final choice by prioritizing the selection criteria in terms of their own training situations.

Justification

The method of adaptive instruction encompasses several different strategies for modifying instruction to meet the needs of individuals and small groups. An understanding of these different strategies is prerequisite to ability to select and use each type. This lesson introduces participants to the range of approaches within the rubric of adaptive instruction.

Evaluation
Activities

Group discussion and use of the selection criteria constitute the evaluation activity for this lesson.

Resources

Content Outline

- Figure 9.1 Adaptive Instruction Is...
 - 9.2 Types of Adaptive Instruction
 - 9.3 Criteria for Selecting Types of Adaptive Instruction
- Handout 9.1 Assignment-Training Situations

Instructional
Approach

This lesson is designed to introduce participants to three major types of adaptive instruction and to provide criteria for selecting the most appropriate type for a given situation. A content outline is

provided to guide the lecture; accompanying figures and handout are keyed in the outline.

- 1) Introduce the concept of adaptive instruction. Describe possible means for adapting instruction to meet learner needs. Explain the role of the instructor. Use Figure 9.1.
- 2) Describe the types of adaptive instruction. Use Figure 9.2.
- 3) Describe four criteria for selecting a type. Use Figure 9.3.
- 4) Distribute Handout 9.1 and demonstrate the assignment using the first training situation. Have participants complete the assignment.
- 5) Discuss possible choices for the assignment.

UNIT NINE: ADAPTIVE INSTRUCTION
LESSON 1 of 4: INTRODUCTION

Content Outline

Estimated time: 30 minutes

ADAPTIVE INSTRUCTION

I. Definition of Adaptive Instruction (lecture, 5 minutes)

Describe adaptive instruction as a means of bringing instruction under some aspect of learner control. Emphasize that the characteristics listed below represent the best of all possible worlds; in the real world, usually time on tasks is the only means of adapting instruction. Use Figure 9.1.

A. Adaptive instruction is both a method and a philosophy. It refers to instruction that meets any or all of the following criteria:

- focuses on participative learner activities
- is adapted or modified to meet needs of individual learners or small groups of learners
- involves the instructor in guidance or supervisory activities rather than teaching (i.e., content-presentation) activities
- allows for variation in:
 - time on task;
 - number of practice activities required;
 - complexity or level of difficulty of practice activities;
 - amount of instructor guidance or supervision;
 - location for use (classroom, OJT, at-home)

Figure 9.1 B. Characteristics

1. learner participates by doing something more than merely listening to or watching the instructor
2. learner-controlled rather than instructor-controlled with regard to one or more of the following:
 - a) time on task - learner controls amount of time spent on a given activity - most common means of adapting instruction
 - b) amount of practice needed - learner decides how many exercises are "enough"
 - c) level of complexity - learner decides how deeply (i.e., amount of complexity and detail) s/he wishes to study
 - d) learning mode - learner decides how s/he wants to learn (e.g., independent study, discussion group, lecture method)
3. in adaptive instruction, the instructor ceases to be a disseminator of information and becomes a manager of the learning environment by:

- a) making learners aware of optional modes, rates of learning, levels of complexity
 - b) providing access to instructional materials, keeping records, responding to learner questions and problems
 - c) counseling learners and helping them make meaningful decisions about learning
 - d) motivating learners
 - e) preparing/selecting instructional materials to meet learners' needs in achieving objectives
4. instruction is Objectives-based; instructional objectives govern the choices of types of adaptive instruction. The interface of objectives and learner needs determine the kind of adaptive instruction used.
- C. Instruction becomes adaptive whenever the learner is allowed to choose
- 1. what s/he wants to learn,
 - 2. how s/he wants to learn, and/or
 - 3. how long s/he wants to learn

II. Three Types of Adaptive Instruction (lecture, 5 minutes)

Explain that each type represents a combination of some instructional method(s) and media that participants have already studied. Emphasize that the term "adaptive instruction" is a grab-bag concept representing combinations of various methods and media, but that each combination permits some type of learner control. Use Figure 9.2.

Figure 9.2

A. Individual Assignments

- participative learning activities which lead toward mastery of objectives;
 - usually constitute only part of a lesson and are thus used in combination with other learning and instructional activities (including other individual assignments)
1. individual content presentations
- learner control through ability to attend to presentation on own time, to control rate of presentation by selectively replaying sections at will (variable-speed playback capacities), to freeze, replay, or fast-play video presentations, to skim or reread print materials.
 - examples: readings, audiotaped lectures, video presentations, audio-visual presentations

2. Exercises (practice activities):

-activities requiring learner to respond to content in some way, to use what is being learned--requires trainees to write, speak, or do something

Examples: exercises in labeling the parts of a diagram, carrying out a procedure, using a concept definition, using a formula to calculate the weight of a sample, and trouble-shooting on a malfunctioning piece of equipment

3. Role-plays, Simulations and Games:

-activities in which learners simulate some event, confrontation, or situation in order to gain experience and insight in dealing with such events. Equipment mock-ups, artificially represented situations, and scenarios are used to provide practice when actual equipment or real-life events and situations cannot conveniently be employed

Examples: simulating a fire drill; playing an instructional game designed to teach participants how to select instructional media; role-playing a tutorial session in order to gain skill as a tutor

B. Individualized Learning Packages (ILPs): use of completely self-contained instructional materials which can be used by an individual learner without direct instructor control. Instead, an instructor or supervisor is needed to manage the access to materials and keep records. Packages can be commercially/professionally prepared or instructor-created. They must contain all materials the learner needs to master objectives

C. Tutorial: one-to-one instructional situation which focuses on identifying and solving a learning problem. The tutor may be either the instructor or a fellow trainee

III. Criteria for Selecting Types of Adaptive Instruction (lecture, 5 minutes)

Briefly discuss the following selection criteria. Call on participants to suggest other useful criteria. Use Figure 9-3.

Figure 9.3 1. What is the need?

- Do different trainees within a class work at different rates?
- Do only one or two trainees require training at any given time?
- Do trainees need "real" experiences with situations and events that cannot be forced to occur on demand?

2. What is the instructional objective?

- Can the instructional objective be achieved by adaptive instruction?
- If so, which type is most appropriate to the objective?

3. What instructional materials are readily available or are easily produced or obtained? At what cost (price or production time/resources)?

4. What are the trainee's preferred learning modes?

IV. Assignment and Discussion (15 minutes)

Handout 9.1 *Distribute Handout 9.1. Go through the first training situation to demonstrate the process of selecting a type of adaptive instruction and recognizing the criteria involved in the choice. Then have participants finish the assignment, using the Content Summary in their manual as a reference. An answer key is provided as a guideline for the follow-up discussion of possible choices on the assignment.*

ADAPTIVE INSTRUCTION IS . . .

Learner – Participative

Learner – Controlled

Instructor Managed and Supervised

Objective – Based

TYPES OF ADAPTIVE INSTRUCTION

Individual Assignments

- individual content presentations
- exercises
- role plays, simulation, games

Individualized Learning Packages

Tutorials

CRITERIA FOR SELECTING TYPES OF ADAPTIVE INSTRUCTION

- the need
- the objectives
- availability and cost
- trainee preferences

UNIT NINE: ADAPTIVE INSTRUCTION
LESSON 1 of 4: INTRODUCTION

Handout 9.1: Assignment

TRAINING SITUATIONS

In your manual, you have a Content Summary about the types of adaptive instruction and criteria for selecting a type. Your task is to consider the following training situations and to select an appropriate type (or types) of adaptive instruction for each. Also note the main criteria involved in making the selection. Be prepared to discuss your choices.

1. An employee repeatedly performs a start-up procedure incorrectly, although he has been given a printed, step-wise procedure for the task.

Appropriate Type(s): _____

Main Criteria for Choice: _____

2. A group of trainees have seen a demonstration of five possible malfunctions of a piece of equipment and also the indicators of each malfunction. Their jobs will require ability to recognize the indicators quickly in order to identify types of malfunctions of this equipment.

Appropriate Type(s): _____

Main Criteria for Choice: _____

3. One of a group of trainees was ill and had to miss a demonstration on using a dissolved oxygen probe.

Appropriate Type(s): _____

Main Criteria for Choice: _____

4. Two of twenty trainees have difficulty working problems involving fractions.

Appropriate Type(s): _____

Main Criteria for Choice: _____

UNIT NINE: ADAPTIVE INSTRUCTION
LESSON 1 of 4: INTRODUCTION

Handout 9.1: Assignment

Instructor's ANSWER KEY

These example answers are guidelines. Participants may have different valid choices. Discuss their rationale for such choices.

1. An employee repeatedly performs a start-up procedure incorrectly, although he has been given a printed, step-wise procedure for the task.

Type(s): Tutorial

Criteria: To identify the need

2. A group of trainees have seen a demonstration of five possible malfunctions of a piece of equipment and also the indicators of each malfunction. Their jobs will require ability to recognize the indicators quickly in order to identify types of malfunctions of this equipment.

Type(s): Individual assignments for exercise such as matching indicators with malfunctions or an actual trouble-shooting practice or else an instructional game. Individualized learning packages for each malfunction situation.

Criteria: All four (need, objective, availability, trainee preference) but the prime question is availability and cost of the equipment for a trouble-shooting practice, the instructional game and the individualized learning packages.

3. One of a group of trainees was ill and had to miss a demonstration on using a dissolved oxygen probe.

Type(s): Individual Assignment for content presentation such as a video or audio visual presentation. Individualized learning package with illustrations or video/audio-visual component. Tutorial to demonstrate the procedure.

Criteria: All four but the prime question is availability of the instructional materials.

4. Two of twenty trainees have difficulty working problems involving fractions.

Type(s): Individualized learning packages to learn the steps involved or tutorial to pinpoint step(s) which cause the difficulty.

Criteria: All four but prime questions are availability of materials and trainee's preferences for learning modes (prefer to work alone or with another?).

UNIT NINE: ADAPTIVE INSTRUCTION
LESSON 2 of 4: INDIVIDUAL ASSIGNMENTS

Estimated time: 30 minutes

Entering
Competencies

Before beginning this lesson, participants should be able to distinguish among the three types of adaptive instruction and employ the criteria to select the most appropriate type(s) for a given situation.

Objective

Behavior

Conditions

Acceptable Performance

By the conclusion of this lesson, participants will be able to distinguish among three kinds of individual assignments and to utilize the criteria for developing each kind. Given examples of assignments, participants will evaluate the assignments. Their responses must be directed to the relevant characteristics and criteria.

Justification

Assignments carry the burden of practice activities in instruction. Participants must be able to create and to evaluate the usefulness of exercises, role-plays, simulations, and games in helping trainees to master objectives.

Evaluation
Activities

A guided discussion evaluating examples of assignments will serve as the evaluation activity for this lesson.

Resources

Content Outline
Figure 9.4 Individual assignments
Handout 9.2 Guidelines
Participant Reference Manual

Instructional
Approach

This lesson is designed to help participants learn to develop effective individual assignments. A lecture and an exercise constitute the lesson activities. A content outline is provided to guide the lecture; figures and handout are keyed in the outline.

1. Define "individual assignment"; describe three types of assignments and give the characteristics of each. Use Figure 9.4.
2. List the guidelines for developing each type of assignment. Use examples of assignments from

this workshop and ask participants to judge them
in terms of the guidelines.
Distribute Handout 9.2.

UNIT NINE: ADAPTIVE INSTRUCTION
LESSON 2 of 4: INDIVIDUAL ASSIGNMENTS

Content Outline

Estimated time: 30 minutes

I. An individual assignment is... (lecture, 10 minutes)

Define the concept. Remind participants that they have, during this workshop, completed all three types of individual assignments: describe the three types and ask participants to identify examples of each from this workshop and other relevant materials. Discuss the characteristics of each type. Use Figure 9.4.

Figure
9.4

A. A learning activity which provides for presentation or practice on some content to be learned

B. Characteristics

- brief
- focuses on a single activity (presentation or practice)
- learner-controlled, usually by time on task
- usually constitutes one activity within a lesson
- used in combination with other methods (including other assignments)
- contains all directions, instructions, materials to carry out activity
- completed individually or in small groups with instructor supervising

C. Types

1. Content Presentations

readings, taped lectures, audio-visual presentations by which individuals or small groups acquire content to be learned; learner controls rate of presentation

2. Exercises (practice activities)

activities requiring learners to use content in some way; can involve real or simulated situations; written, oral, or psychomotor responses

3. Games, Simulations, Role-plays

learners simulate some event or situation to gain practical experience and insight

II. Guidelines for Developing Individual Assignments (lecture, 20 minutes)

List the guidelines for each type; ask participants to identify examples of each from this workshop; provide additional examples as warranted. Have participants apply the guidelines to evaluate

each example. Ask participants to suggest additional guidelines as appropriate. Distribute Handout 9.2.

A. Content Presentations

1. Presentation must be specifically related to instructional objectives. "Nice-to-know" information may be disseminated by readings to avoid taking class time.
2. The organization of the assignment must contain an introduction (explaining the topic, purpose, and structure of the presentation), the body (presenting the content to be learned) and the conclusion (summarizing major content points).
3. Content should be application/use-oriented.
4. Content should be structured from simple to complex.
5. Language level should be appropriate for learners (neither too complex or abstract nor too simplistic).
6. Assignment should include opportunities for practice and feedback by such means as inserted questions and self-checks for which answers are provided.
7. Assignment should be complete -- i.e., contain all directions necessary for learners to complete it.

B. Exercises (Practice)

1. Exercises must be specifically related to objectives and application/use-oriented.
2. Exercises should proceed in sequence from simple to more complex activities.
3. Exercises must allow learners to practice the kinds of behaviors, under the kinds of conditions, which they will be expected to perform during assessment and on-the-job.
4. All appropriate rules and guidelines for teaching toward specific kinds of objectives must be followed (see Unit Seven).
5. Directions and instructions to learners must be complete and self-contained.
6. Opportunities for feedback must be provided. Answer keys and guided discussions are two effective means of providing feedback.

C. Simulations, Role-plays, Games

1. For each, a scenario describing the purpose, objectives, and conditions for the activity must be prepared. All

appropriate rules and guidelines for designing activities must be followed (see Unit Seven).

2. The instructor should not take an active part; rather, s/he should supervise the activity.
3. All rules for participating in and analyzing these activities must be made public and agreed to by trainees before the activity begins.
4. The instructor must be especially careful that no participant is singled out as an individual example or a scapegoat. The activity must not disintegrate into an attack on individuals in the group.
5. All simulation-type activities must be followed by debriefing guided discussions during which participants have opportunities to explore feelings and to share problems and solutions. These activities should increase the sense of camaraderie among the group.

INDIVIDUAL ASSIGNMENTS

Content Presentations

Exercises

Role-Plays, Simulations, and Games

241

206

Figure 9.4/Individual Assignments

UNIT NINE: ADAPTIVE INSTRUCTION
LESSON 2 of 4: INDIVIDUAL ASSIGNMENTS

Handout 9.2: Guidelines

A. Content Presentations

1. Presentation must be specifically related to instructional objectives. "Nice-to-know" information may be disseminated by readings to avoid taking class time.
2. The organization of the assignment must contain an introduction (explaining the topic, purpose, and structure of the presentation), the body (presenting the content to be learned) and the conclusion (summarizing major content points).
3. Content should be application/use-oriented.
4. Content should be structured from simple to complex.
5. Language level should be appropriate for learners (neither too complex or abstract nor too simplistic).
6. Assignment should include opportunities for practice and feedback by such means as inserted questions and self-checks for which answers are provided.
7. Assignment should be complete -- i.e., contain all directions necessary for learners to complete it.

B. Exercises (Practice)

1. Exercises must be specifically related to objectives and application/use-oriented.
2. Exercises should proceed in sequence from simple to more complex activities.
3. Exercises must allow learners to practice the kinds of behaviors, under the kinds of conditions, which they will be expected to perform during assessment and on-the-job.
4. All appropriate rules and guidelines for teaching toward specific kinds of objectives must be followed (see Unit Seven).
5. Directions and instructions to learners must be complete and self-contained.
6. Opportunities for feedback must be provided. Answer keys and guided discussions are two effective means of providing feedback.

C. Simulations, Role-plays, Games

1. For each, a scenario describing the purpose, objectives, and conditions for the activity must be prepared. All

appropriate rules and guidelines for designing activities must be followed (see Unit Seven).

2. The instructor should not take an active part; rather, s/he should supervise the activity.
3. All rules for participating in and analyzing these activities must be made public and agreed to by trainees before the activity begins.
4. The instructor must be especially careful that no participant is singled out as an individual example or a scapegoat. The activity must not disintegrate into an attack on individuals in the group.
5. All simulation-type activities must be followed by debriefing guided discussions during which participants have opportunities to explore feelings and to share problems and solutions. These activities should increase the sense of camaraderie among the group.

UNIT NINE: ADAPTIVE INSTRUCTION
LESSON 3 of 4: INDIVIDUALIZED LEARNING PACKAGES

Estimated time: 45 minutes

Entering
Competencies

Before beginning this lesson, participants should be able to distinguish among the three types of adaptive instruction and employ the criteria to select the most appropriate type(s) for a given situation.

Objectives

Behavior

Conditions

Acceptable Performance

By the conclusion of this lesson, participants will be able to evaluate individualized learning packages and to select those which are most appropriate to meet stated needs. Using standards developed through the lesson, participants will examine examples of individualized learning packages, rate them according to the criteria they have learned, and justify their ratings.

Justification

Individualized Learning Packages (ILPs) can be extremely useful instructional tools if they are correctly developed and carefully selected. This lesson acquaints participants with concerns in the selection and use of ILPs.

Evaluation
Activities

A small-group exercise in evaluating Individualized Learning Packages serves as the evaluation activity for this lesson.

Resources

Content Outline
Figure 9.5 Characteristics
Figure 9.6 Caveats
Handout 9.3 Characteristics and Caveats
Handout 9.4-9.6 ILPs selected by instructor.

Instructional
Approach

1. Define the concept. List the characteristics of effective Individualized Learning Packages. Use Figure 9.5.
2. Discuss caveats involved in selecting commercially-prepared ILPs. Use Figure 9.6.
3. Distribute Handout 9.3 to everyone. Divide participants into small groups and provide each group with an ILP for examination and evaluation.

UNIT NINE: - ADAPTIVE INSTRUCTION
LESSON 3 of 4: INDIVIDUALIZED LEARNING PACKAGES

Content Outline

Estimated time: 45 minutes

1. Individualized Learning Packages (ILPs) (lecture, 7 minutes)

*Define the concept. List the characteristics of effective ILPs.
Use Figure 9.5.*

A. An Individualized Learning Package is

1. A self-contained instructional unit which provides all information, guidance, and criteria so that the learner can "teach him/herself"
2. Instructor-managed and supervised, not taught
3. Objective-specific

B. Minimally, an ILP should contain

1. Trainer's Manual - explaining how the trainer/instructor should arrange the logistics, what the goals of the program are, how these goals are to be achieved, demonstrated, and evaluated, how records should be kept, and any other appropriate information
2. Trainee's Manual - containing all information, presentation, and practice activities, and evaluations such that the trainee/learner can take the package away with him/her and master objectives on his/her own
3. Instructional Resources - copies or references for all learning resources (i.e., films, readings, etc.) and instructions for utilizing them

C. Characteristics of a good ILP

Figure
9.5

1. Objective-specific - the selection of instructional strategies should follow guidelines and rules for teaching toward particular objectives (see Unit Seven)
2. Attractively packaged - easy to read and to find materials; written in language learners can understand, neat and self-contained so that learners can manage the pieces of it easily
3. Completely self-contained - learner should not have to go to the instructor for materials while working through the instruction
4. In disposable form - key content information and assessment

activities should be in a form that the learner can obtain his/her own copies rather than have to take notes

5. Field-tested - materials should have been developed and revised in accordance with objective information from learners similar to those who will use it to learn

II. Caveats (lecture, 8 minutes)

Discuss the warnings about preparing and selecting ILPs. Use Figure 9.6.

Figure 9.6 A. For selecting prepared ILPs

1. Seduction by Surface - beware of extremely attractive packaging that hides poorly designed instruction. It is not the artwork on the box, but the quality of the instruction inside the box that matters
2. Seduction by Testimonial - glowing testimonials about how wonderful a package is are no substitute for objective field-test data. Ensure that the package has been designed and revised appropriately
3. Seduction by Goals - general goals which imply global intellectual and emotional growth are no substitute for specific objectives which are performance-based and which lead to attainment of specific skills and knowledge. Moreover, the objectives of the package must match your course or unit objectives or the package is useless for your purposes
4. Seduction by Convenience - it is very easy to pull a package off a shelf and assign it in place of designing instruction; however, until you have made certain that the package teaches what you want taught, in the way you want it taught, you are sacrificing cost-effectiveness for convenience

B. For preparing your own ILPs

1. Make sure that the objectives of the instruction are amenable to individualized instruction
2. Make sure that you have enough time to do a good and thorough job in development; sloppy work under rushed conditions is a waste of resources
3. Make sure that, given your situation, the ILP is the best instructional method
4. Make sure that the conditions of its use can be guaranteed fairly well; a beautiful program with magnificently designed and produced films is useless in a training center with no viewing capabilities
5. Make certain that you follow the appropriate rules and guidelines for designing instruction (see Unit Seven)

6. Follow the development process; plan the instruction appropriately; field-test and revise as necessary

III. Exercise (assignment, 30 minutes)

Handout 9.3 *Prior to the workshop, select two to four Individualized Learning Packages (ILPs) with which you are familiar. Now, distribute them to small groups of the participants. Also distribute Handout 9.3. Have each group examine their ILP and evaluate it in terms of the characteristics and caveats listed above. Each group should reach a conclusion about the usefulness of the material they evaluated which indicates whether it violates the caveats or meets the criteria for effective instruction.*

CHARACTERISTICS

Objective-specific

Attractively packaged

Completely self-contained

Disposable form

Field -tested

CAVEATS

- Seduction by Surface
- Seduction by Testimonial
- Seduction by Goals
- Seduction by Convenience

UNIT NINE: ADAPTIVE INSTRUCTION
LESSON 3 of 4: INDIVIDUALIZED LEARNING PACKAGES

Handout 9.3: Characteristics and Caveats

A. Characteristics of good ILPs

1. Contains trainer's manual, trainee's manual, instructional resources - self-contained
2. Is objective-specific
3. Is attractively packaged
4. Is in disposable form
5. Has been field-tested
6. Obeys all appropriate rules for designing instruction

B. Caveats

1. For selecting commercially-prepared ILPs

- seduction by surface
- seduction by testimonial
- seduction by goals
- seduction by convenience

2. For preparing ILPs

- objectives of instruction amenable to this method
- sufficient time and resources to do a good job
- ILP is best method for your instructional situation
- conditions of use can be guaranteed
- follow instructional development process.
- utilize appropriate strategies for teaching particular objectives

UNIT NINE: ADAPTIVE INSTRUCTION
LESSON 4 of 4: CONDUCTING TUTORIALS

Estimated time: 15 minutes

Entering
Competencies

Before beginning this lesson, participants should be able to distinguish among the three types of adaptive instruction and employ the criteria to select the most appropriate type(s) for a given situation.

Objective

Behavior

Conditions

Acceptable Performance

By the conclusion of this lesson, participants will be able to identify the characteristics and guidelines for conducting effective tutorials. Using the information provided in the lesson, participants will develop a brief checklist or questionnaire that they can use to guide and evaluate their skills as tutors.

Justification

Skill in working directly with individual learners is basic to successful instruction. In this lesson, participants learn how tutorials should be conducted.

Evaluation
Activities

An assignment constitutes the evaluation activity for this lesson.

Resources

Content Outline
Figure 9.7 Tutorial Guideline
Handout 9.7 Assignment

Instructional
Approach

This lesson is designed to help participants learn to conduct effective and efficient tutorials. A lecture and an assignment constitute the lesson activities. A content outline is provided to guide the lecture; figure and handout are keyed in the text.

1. Define tutorial; ask participants to remember previous experiences with tutors and to identify characteristics of good experiences.
2. List guidelines; use Figure 9.7.
3. Handout Assignment Handout 9.7.

UNIT NINE: ADAPTIVE INSTRUCTION
LESSON 4 of 4: CONDUCTING TUTORIALS

Content Outline

Estimated time: 15 minutes

I. Tutorials (lecture, 15 minutes)

Define the concept. Ask participants to recall their own experiences in tutoring and being tutored. Ask them to state characteristics of effective tutoring sessions from their own experiences. List these criteria; work with participants to turn them into guidelines. Ensure that all points on the included list of guidelines are included. Use Figure 9.7.

A. A tutorial is one-to-one problem-solving session between tutor and learner

1. tutor need not be the instructor; can be another learner who has successfully mastered the content causing the problem
2. session is problem specific; ends when problem is resolved or learner is referred to another resource
3. is not a personal counseling session; deals only with problems in mastering the content to be learned

B. Criteria for conducting effective tutorials

Figure 9.7 1. Hold session in private; many learners are embarrassed by learning difficulties

2. Be problem-specific; don't waste time on social conversation
3. Do not counsel on personal problems; tutorials are only for learning problems
4. Do not teach or provide answers to questions; assist learner in finding answers. Provide guidance and directions, but force the learner to do the work
5. Identify the problem as quickly and simply as possible; relate it directly to an instructional objective and review learner's previous attempts to solve the problem
6. Refer learner to additional instructional materials/resources as appropriate. Do not teach
7. Be supportive and reassuring; interpersonal skills play a crucial role in effective tutoring
8. End the session when either the problem is solved to the learner's satisfaction or the learner has been referred to the appropriate resource. Do not hold sessions longer than an hour since concentration is reduced the longer the session lasts

9. Let learners know that tutors are available, the hours and locations of availability, and the people willing to tutor. If several tutors are used, assign one person to keep track of those requiring tutoring, the problems, the length of the sessions, and any other meaningful information. Use this information to ensure that tutorials are not being used as substitutes for paying attention to class session or as gripe sessions.

II. Assignment *(take-home assignment)*

Handout
9.7 *Distribute Handout 9.7. Review directions with participants and ask them to turn in a copy of their questionnaire or check list at the next class session (or after an appropriate time lapse.)*

TUTORIAL GUIDELINES

Private

Problem-specific

Not counselling

Not teaching

Related to objectives

Uses resources as appropriate

Supportive and reassuring

Brief

Availability made public

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Figure 9.7/Tutorial Guidelines

UNIT NINE: ADAPTIVE INSTRUCTION
LESSON 4 of 4: CONDUCTING TUTORIALS

Handout 9.7: Assignment

EXERCISE IN CONDUCTING TUTORIALS

You have just finished discussing the characteristics of effective tutorials. Your task is to turn the information you have gained into a document (such as a questionnaire or check list) which will help you to guide and evaluate your conduct of tutorials. You should include all criteria which you consider important to remember and use, as well as space to indicate that you, in fact, followed those criteria. The document you produce should be relevant to your needs when you are conducting tutorials.

ADVANCED INSTRUCTIONAL TECHNOLOGY

UNIT TEN
MANAGEMENT OF INSTRUCTION - Unit Overview

Estimated time for unit - 2 hours 10 minutes

Overview

This unit consists of three lessons each dealing with the management of particular kinds of instructional situations: formal, classroom instruction, on-the-job or near-site training, and workshops. Each lesson deals with materials particularly important to the conduct of that kind of instructional activity, but they also contain suggestions and considerations relevant across all three situations. The main focus of the lesson on classroom management is the control of the physical and psychological environment of the instructional situation. The lesson on training in a work environment highlights techniques, advantages and disadvantages of on- or near-site training. Finally, the lesson on planning workshops details the kinds of specific logistical preparations that may have to be completed in advance of an instructional activity.

Entering Competencies

No specific entering competencies are required.

Summary of Objectives

As a result of this unit's instruction participants will be able to:

- identify important variables in the physical and interpersonal environment of the classroom and describe examples of techniques for classroom management and maintaining trainee attention
- describe techniques and characteristics of effective training in the work environment
- describe administrative and logistical considerations involved in planning and conducting a workshop.

Evaluation Activities

The instructor will insure that participants have accomplished the unit's objective through their participation in class discussions.

References

David, L. M. and McCallon, E. Workshops.
Austin, Texas: Learning Concepts, 1974.

Summary of Unit Activities

Lesson Title	Instructional Methods	Time	Support Materials
1) Classroom Management	Lecture; Guided Discussion	45 min.	Content Outline Figure 10.1-10.5 Handout 10.1
2) Training in the Work Environment	Lecture; Guided Discussion	40 min.	Content Outline
3) Planning and Conducting Workshops	Guided Discussion	45 min.	Workshop Check List

UNIT TEN: MANAGEMENT OF INSTRUCTION
LESSON 1 of 3: CLASSROOM MANAGEMENT

Estimated time: 45 minutes

Entering
Competencies

None.

Objectives

Behavior

Conditions

Acceptable Performance

The activities of this lesson will enable participants to identify important variables in the physical and interpersonal environment of the classroom and predict their impact upon instructional effectiveness. In a guided discussion, participants will draw upon their personal experiences to demonstrate their understanding of the variables by identifying and describing the impact of at least one variable.

Behavior

Conditions

Acceptable Performance

Participants will also be able to describe and give examples of basic techniques for managing the class and maintaining attention. In general discussion, each participant will describe and provide an example of at least one technique.

Justification

A variety of physical and psychological variables can have a serious impact upon the effectiveness of instructional presentations. This lesson reviews those variables which can be controlled through careful management of instructional activities in the classroom.

Evaluation
Activities

Instructor will insure that participants have accomplished the unit's objectives through their participation in class.

Resources

Content Outline

- Figure 10.1 Environmental Influence
 - 10.2 Physical Environment
 - 10.3 Psychological Environment
 - 10.4 Planning Considerations
 - 10.5 Managing Techniques

Handout 10.1 Techniques for Overcoming Problems with the Physical or Psychological Environment

Instructional
Approach

This lesson begins with a brief introductory lecture on the impact the environment can have on instruction. This is followed by a guided discussion of the physical and psychological factors which may impede learning. Finally, a discussion and summary lecture on techniques for controlling these factors and minimizing their effects should be planned. A handout has been designed to accompany this lesson, but it should not be given out until the end to insure meaningful and creative discussion sessions.

1. Introduce the topic of environmental influences on learning and instruction.
2. Conduct a discussion on the physical and psychological environment of the classroom. Have each participant suggest a specific characteristic and describe its potential impact upon instructional effectiveness. (See content outline.) List the points as they are generated.
3. In a similar manner, ask participants to suggest techniques for managing the class and maintaining attention that will control environmental factors or limit their effects. Call upon individual participants to suggest techniques and give examples. Give a brief lecture summarizing the techniques for overcoming problems with the environment (listed in the content outline).
4. At the conclusion of the lesson, distribute Handout 10.1 for inclusion in Participant Reference Manual.

UNIT TEN: MANAGEMENT OF INSTRUCTION
LESSON 1 of 3: CLASSROOM MANAGEMENT

Content Outline

Estimated

I. Introduction (lecture, 5 minutes)

Figure
10.1

- A. Environment's influence on instruction is illustrated by a simple model of the process of instructional communication. The environment may either change the instructional message before it reaches the learner, or affect the learner's ability to receive it
- B. Two major kinds of environmental influences on instructional communication:
 1. Physical environment - the setting for the instruction
 2. Psychological environment - the learner's attitudes and dispositions towards the instruction or the setting

C. Summary of this lesson's objectives

II. Environmental Effects on Communication (guided discussion, 20 minutes)

A. Effects of physical environment on communication

Figure
10.2

Lead class in guided discussion in which you call upon participants to first identify an important physical characteristic of instructional effectiveness. Some of the characteristics that should be introduced include: classroom size, classroom furnishings, classroom arrangement, lighting, acoustics, class size, time of day, length of class. If the discussion is slow in starting give the first example: (i.e., describe how poor acoustics can effect communication by either making it impossible to hear the message, or by making it so difficult that the trainee gets tired and stops paying attention.) Use Figure 10.2 to summarize the discussion by listing the identified environmental characteristics and their effects.

B. Effects of the psychological environment on communication

Figure

10.3

Continue the preceding discussion, calling upon the participants to describe how the psychological environment can effect instructional communication. Some of the points that should be considered include: teacher attitudes towards the class or the subject of instruction, trainee

attitudes towards the teacher, and the subject of instruction, motivation and rewards for training, and the interpersonal relationships of the trainees with each other and the instructor. Summarize the discussion using Figure 10.3 on the overhead projector (or use the blackboard).

III. Techniques for Overcoming Problems with the Physical or Psychological Environment (guided discussion and lecture, 20 minutes)

Have participants suggest planning considerations and techniques for managing instruction. In your summary lecture cover any of the points below which may not come up in the discussion.

Figure
10.4

A. Things to consider in planning instruction:

1. Selection of instructional methods and media to accomodate the physical environment
2. Development of rewards for motivating students
3. Planning the teaching schedule to allow for breaks, questioning periods, etc.
4. Determining the degree of formality - informality you wish to maintain in the classroom

B. Techniques for managing the class and maintaining attention:

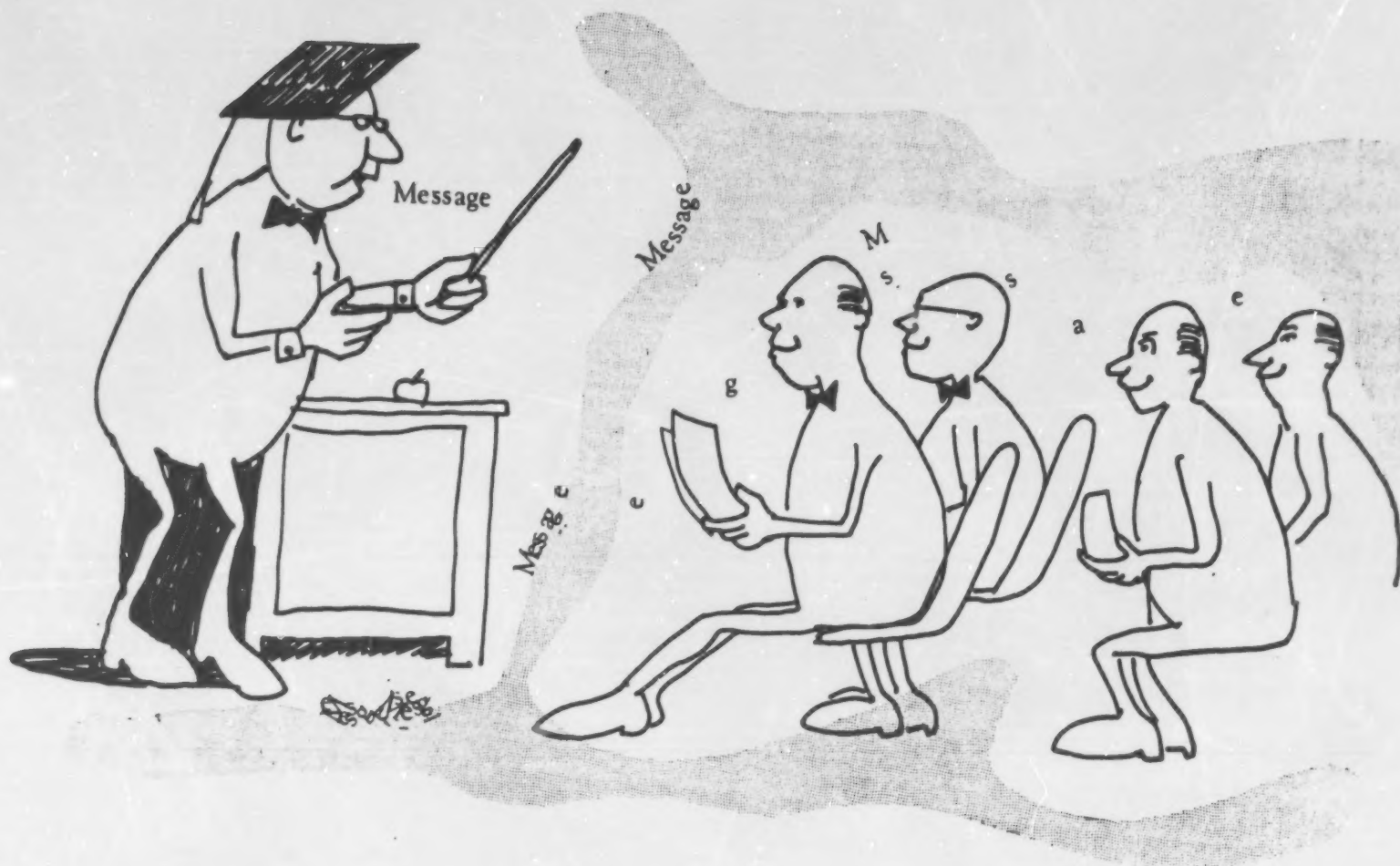
Figure
10.5

1. Introduce the class by explaining what is to be taught and outlining the instruction. Explain how it meets the needs/interests/backgrounds of the learners
2. Keep learners informed of progress through the instruction (i.e., "the second point that must be explained..., the last exercise for today...")
3. Keep attention focused on key instructional points through verbal directions or emphasis (i.e., "what's important here is that..."). Use media or graphic techniques to highlight points
4. Maintain high levels of learner participation in the instruction
 - a) frequent questions and exercises
 - b) use of instructional methods other than the lecture

5. Pace the instruction appropriately for that particular group of learners. Use a variety of instructional media and methods
6. During lectures, move closer to the class and/or move around the room if attention is slipping. Stand closest to, or lecture at, those who appear to be falling asleep
7. Counsel "problem" or disruptive learners outside of class
8. Be fair and considerate to all members of the class

Handout
10.1

Distribute Handout 10.1 for inclusion in Participant Reference Manual.



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Figure 10.1/Environmental Influence

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PHYSICAL ENVIRONMENT AND INSTRUCTION

Characteristic

Effect

-Poor Acoustics

-Can't hear instruction

-Loss of attention

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Figure 10.2/Physical Environment

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PSYCHOLOGICAL ENVIRONMENT AND INSTRUCTION

Characteristic

Effect

257

232

268

Figure 10.3/Psychological Environment

CONSIDERATIONS WHEN PLANNING INSTRUCTION

- Selection of Methods and Media
- Rewards
- Class Schedule
- Degree of Formality

TECHNIQUES FOR MANAGING CLASS AND MAINTAINING ATTENTION

- Begin with overview**
- Note progress**
- Direct attention**
- Maintain participation**
- Appropriate pace and variety**
- Move around classroom**
- Counsel problem students**
- Treat all students equally**

UNIT TEN: MANAGEMENT OF INSTRUCTION
LESSON 1 of 3: CLASSROOM MANAGEMENT

Handout 10.1: Techniques for Overcoming Problems with the Physical or Psychological Environment

A. Things to consider in planning instruction:

1. Selection of instructional methods and media to accommodate the physical environment.
2. Development of rewards for motivating students.
3. Planning the teaching schedule to allow for breaks, questioning periods, etc.
4. Determining the degree of formality - informality you wish to maintain in the classroom.

B. Techniques for managing the class and maintaining attention.

1. Introduce the class by explaining what is to be taught and outlining the instruction. Explain how it meets the needs/interests/backgrounds of the learners.
2. Keep learners informed of progress through the instruction (i.e., "the second point that must be explained..., the last exercise for today...").
3. Keep attention focused on key instructional points through verbal directions or emphasis (i.e., "what's important here is that..."). Use media or graphic techniques to highlight points.
4. Maintain high levels of learner participation in the instruction.
 - a) frequent questions and exercises
 - b) use of instructional methods other than the lecture
5. Pace the instruction appropriately for that particular group of learners. Use a variety of instructional media and methods.
6. During lectures, move closer to the class and/or move around the room if attention is slipping. Stand closest to, or lecture at, those who appear to be falling asleep.
7. Counsel "problem" or disruptive learners outside of class. 271
8. Be fair and considerate to all members of the class.

UNIT TEN: MANAGEMENT OF INSTRUCTION
 LESSON 2 of 3: TRAINING IN THE WORK ENVIRONMENT

Estimated time: 40 minutes

Entering
Competencies

None.

Objectives

Behavior

Conditions

Acceptable Performance

By the conclusion of this lesson, participants will be able to describe characteristics of, and techniques for conducting on- or near-site training. In a guided discussion, participants will draw upon their personal experiences to demonstrate their understanding of these characteristics and techniques by offering at least one original example or contribution to the discussion.

Justification

One of the most cost-effective ways to conduct many training activities is on- or near the site of the job's performance. This lesson outlines key considerations in conducting or managing training in this setting.

Evaluation
Activities

Instructor will insure that participants have accomplished the unit's objectives through their participation in class.

Resources

Content Outline

Instructional
Approach

The lesson begins with a guided discussion to define elements, advantages and disadvantages of on- or near-site training. This is followed by a lecture and further discussion on special considerations for conducting training in or near a work setting. The discussions should draw upon the experiences of the participants to add information or to exemplify problems and solutions to problems.

UNIT TEN: MANAGEMENT OF INSTRUCTION
 LESSON 2 of 3: TRAINING IN THE WORK ENVIRONMENT

Content Outline

Estimated time: 40 minutes

- I. Guided Discussion to Define Elements, Advantages and Disadvantages of On- or Near-Site Training (guided discussion, 15 minutes).

Introduce the subject of the lesson and then lead a discussion following the outline below.

- A. When we use the expression "training in a work environment", what does it mean to you?
1. Other terms: on-site training, on-the-job training, field training.
 2. Elicit the types of training and environments that might be involved:

Hands-on instruction, especially in operations, is conducted in a plant. Sometimes training is conducted in a central location and students travel to a nearby plant when appropriate. Some training (e.g., laboratory procedures, calculations) can be conducted in a central location with no need to visit a work site.

- B. Who serves as the instructor for this type of training?

He might be an "outside" independent trainer from a government agency, a training center, community college, etc. Supervisory personnel often serve as instructors for their own personnel or for several employees of plants in nearby locations.

- C. Who are the trainees?

Employees who are upgrading their professional skills. They are usually highly motivated. They are also easily "turned off" by poorly prepared instructors, preventable time wasters (like no extension cord, so no slides shown), "war stories" instead of instruction, etc.

- D. What seems to be an effective amount of time for the training sessions?

The instructional objectives to be achieved directly affect the amount of time required for the training. Related objectives can be grouped, though, to total an effective time span.

Some have found that one, two, or five day durations work well. If training lasts one or two days at a time, the trainee can get caught up on job responsibilities that accumulate with reasonable extra effort. For a five day period, he usually has someone to take care of most of his daily duties. If there is no replacement, it is often a burden to "catch up" after three or four days away from the job.

- E. What are some advantages of conducting training in or near a work environment?
1. Advantages for the employer?
 - less expense involved to upgrade employee's skills
 - other
 2. Advantages for the trainee?
 - feels very comfortable in his own work environment or in familiar surroundings
 - lives at home so avoids personal reaction to living away from home
 - travel is not an extra expense or problem
 - other
 3. Instructional Advantages? The plant provides:
 - "real-world" situations for learning how equipment functions (or should function)
 - ideal possibilities for evaluation of trainee understanding and performance
 - a realistic setting where trainees can easily relate to discussions and demonstrations
 - a reinforcement of training objectives if the plant exemplifies well-run operations
- F. What are the disadvantages to training in or near work environment?
1. Disadvantages for the trainee if training is at his own work site?
 - he might be expected to "trail behind" someone to get trained; hazy objectives

- his role may not be clearly defined regarding total commitment of his time, the degree of effort expected, etc.
- a job emergency may require his leaving
- he may be distracted by co-workers or his usual job responsibilities
- he may be uncomfortable or even resentful if the training disrupts the usual schedule for breaks, lunch, etc.

2. Disadvantages for the instructor?

a. May be a little ill at ease:

- he is away from usual work place and/or filling a part-time, perhaps new role
- may be away from home

b. May have special problems if he is an "in-house" person. Management may not:

- define his role as an instructor for other personnel
- commit the necessary, uninterrupted time for preparation and delivery of instruction

3. Instructional Disadvantages?

- all instructional materials (aside from plant equipment) must be prepared and transported to the work site
- often plants do not have any space adaptable for utilizing audiovisual aids
- noise can make communications difficult

II. Considerations for Conducting Training In or Near a Work Setting (lecture, guided discussion, 25 minutes).

Deliver the following lecture with frequent opportunities for participants to discuss points presented or provide examples based on their own experiences.

A. Defining Roles

Whether the instructor is in-house or from an outside group, all roles should be clearly defined. Some questions to be resolved are:

1. What is the role of the instructor in relation to that of the plant supervisor? Is the trainee a supervisor?

2. Is the instructor from a regulatory agency? Do the personnel feel "threatened"?
3. What is the instructor permitted to do with or to equipment at the plant?
4. Who is responsible if equipment is damaged or an accident occurs?
5. Can the instructor and the trainee(s) devote the total allotted time to instructional activities?

B. Choosing a site

When choosing a site to conduct training for employees from more than one plant in an area:

1. Provide an environment where the trainees can feel comfortable and can learn. Avoid schools. Look for community centers like a city hall, fire house, etc., with restaurants nearby.
2. Choose a plant utilizing processes most common in the area. The plant should be reasonably near the instructional center.
3. The instructor must be familiar with the specific equipment at the plant so he can explain or demonstrate it.

C. Preparing for Instruction

1. Prepare and use a thorough check list for all instructional materials and audiovisual equipment including extension cords, extra bulbs, etc., since these are not ordinarily available.
2. All preparations must be done in advance because resources will not be available.
3. Contingency plans are especially important. For example, have an alternate "classroom" presentation ready in case rain prevents use of plant facilities. Have a pertinent audiovisual ready to show if a speaker is called out for some emergency.
4. Arrive early enough to:
 - make personal contacts
 - check out plant equipment if it is involved in the instruction
 - check out meeting room facilities
 - set up and check out projection equipment, etc.
 - set up any demonstration equipment

- Organize instructional materials

- plan or arrange facilities with regard to seeing, hearing, and minimizing distractions

- arrange for carrying out contingency plans in case equipment malfunctions, etc.

D. Providing Follow-Up

1. Follow up immediately on questions you couldn't answer during instruction.
2. Be available personally or by telephone for continuing assistance after the training.

E. Other Considerations?

UNIT TEN: MANAGEMENT OF INSTRUCTION
LESSON 3 of 3: PLANNING AND CONDUCTING WORKSHOPS

Estimated time: 45 minutes

Entering
Competencies

No specific entering competencies are required.

Objective

Behavior

Conditions

Acceptable Performance

By the end of this unit, participants will be able to describe the various administrative and logistical considerations involved in planning and conducting a workshop. Using the Workshop Check List (in the Participant Reference Manual) participants will be able to describe the nature and treatment of each point on the check list.

Justification

Totally aside from questions of instructional design, the planning and conduct of training workshops is a complex endeavor. This unit reviews the variety of tasks and issues that may have to be considered in bringing a workshop to a successful conclusion.

Evaluation
Activities

The instructor will insure that participants have accomplished the unit's objective through their participation in class discussions.

Resources

Workshop Check List in the Participant Reference Manual.

Instructional
Approach

The presentation of this lesson depends a lot on your own experience (and perhaps that of the participants) in preparing and delivering workshops. Anecdotes and illustrations should be used as much as possible. An effort should be made to tailor your suggestions to the particular training environment facing your participants. This is also a good opportunity for them to raise any particular questions or concerns about their future responsibilities as trainers.

The Workshop Check List in the Participant Reference Manual (a copy is also included here) provides the framework for the instructional activities of this lesson. Go through the Check List on a point-by-point basis. Encourage participant questions and examples.

Particular attention should be given to the following points on the check list: budgeting, timelines for workshop preparation, agendas, field tests, and meeting room arrangements.

1. Under budgeting, discuss some typical budget items and costs for workshops in the participants' settings.
2. In discussing timelines for workshop preparation, emphasize the need to be realistic and allow plenty of time to accomplish everything. (The "Milestones" suggested for this workshop provides an example of the timing of some of these activities.)
3. Note that in planning workshop agendas it is important to be realistic regarding coffee breaks, lunch and the lengths of individual presentations. Participants need to have a break or a change in instructional activities about every hour to hour-and-a-half in order to remain attentive.
4. Stress the importance of field testing every kind of instructional presentation (from a 15-minute address to a week-long workshop). The nature and rigor of the field test can vary substantially. The point is to try out the materials to find out if they really work with an audience similar to your target audience. (No matter how carefully developed the materials are, you are likely to find that they will require substantial revisions. These revisions often mark the difference between successful and unsuccessful workshops.)
5. Under meeting room arrangements discuss how seating and table configurations reflect the nature of desired participant-participant and participant-instructor interactions. (Traditional classroom seating arrangements lead to a traditional classroom atmosphere.)

WORKSHOP CHECK LIST

The following checklist is designed to facilitate the control of key administrative and logistical considerations in planning and conducting workshops.

All of the points will not be relevant to every workshop. Use the left-hand column to check those points which do apply to the workshop under consideration. Establish a deadline for the completion of each point/task and write the date in the space provided. Finally, use the righthand column to check off each task as it is completed.

(Note: This checklist does not consider the design of the workshop's instructional content as these activities are presumed to proceed separately following the steps of the instructional design model presented in Unit One.)

☐ Applicable

Completed ☐

Administrative Considerations

- | | | | |
|--------------------------|---|----------------|--------------------------|
| ☐ | Workshop staff identified (Director/Chair, Trainer, Audio-Visual Specialist, Other) | Deadline _____ | ☐ |
| ☐ | Budget established (Salaries/honorariums, consultants, media production, equipment and facilities rental, transportation, participant costs, duplication and telephone) | Deadline _____ | ☐ |
| ☐ | Production resources identified and availability determined (for signs, manuals, programs, etc) | Deadline _____ | ☐ |

Technical Planning and Operations

- | | | | |
|--------------------------|--|----------------|--------------------------|
| ☐ | Target audience identified | Deadline _____ | ☐ |
| ☐ | Workshop date or dates determined | Deadline _____ | ☐ |
| ☐ | Overall timelines for workshop preparation established | Deadline _____ | ☐ |
| ☐ | Means of contacting target audience determined | Deadline _____ | ☐ |
| ☐ | Target audience contacted | Deadline _____ | ☐ |
| ☐ | Workshop's objectives defined | Deadline _____ | ☐ |
| ☐ | Agenda established | Deadline _____ | ☐ |
| ☐ | First draft of training materials/presentations | Deadline _____ | ☐ |
| ☐ | Field test of workshop materials | Deadline _____ | ☐ |

- ☐ Meeting rooms and other facilities located and reserved (see below) *Deadline* _____ ☐
- ☐ Revised workshop materials *Deadline* _____ ☐
- ☐ Materials reproduced in final form for workshop *Deadline* _____ ☐
- ☐ Travel arrangements completed *Deadline* _____ ☐

Facilities Arrangements

- ☐ Meeting room arranged as desired *Deadline* _____ ☐
- ☐ Provision for room darkening available *Deadline* _____ ☐
- ☐ Room clean, furniture suitable, lighting/air conditioning working properly *Deadline* _____ ☐
- ☐ Public address system available and working *Deadline* _____ ☐
- ☐ Water glasses/pitchers available for speakers and participants *Deadline* _____ ☐
- ☐ Ashtrays available and/or local smoking regulations determined *Deadline* _____ ☐
- ☐ Chalkboard, easels, screens, pointers available for presentations as required *Deadline* _____ ☐
- ☐ Pencils, note paper available for participants *Deadline* _____ ☐
- ☐ Arrangements made for coffee breaks/lunch *Deadline* _____ ☐
- ☐ Arrangements for participant registration complete *Deadline* _____ ☐

Audio-Visual Preparations

- ☐ Necessary projection equipment of suitable size and type available/ordered *Deadline* _____ ☐
- ☐ Projectionist scheduled for each session *Deadline* _____ ☐
- ☐ Availability/compatibility of power source determined *Deadline* _____ ☐
- ☐ Spare lamps and fuses obtained *Deadline* _____ ☐
- ☐ Public address system tested and volume levels set *Deadline* _____ ☐
- ☐ Projection equipment tested in the meeting room using actual materials *Deadline* _____ ☐
- ☐ Recording equipment set up and tested *Deadline* _____ ☐
- ☐ Copies of all print and audio-visual materials delivered to workshop site *Deadline* _____ ☐

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